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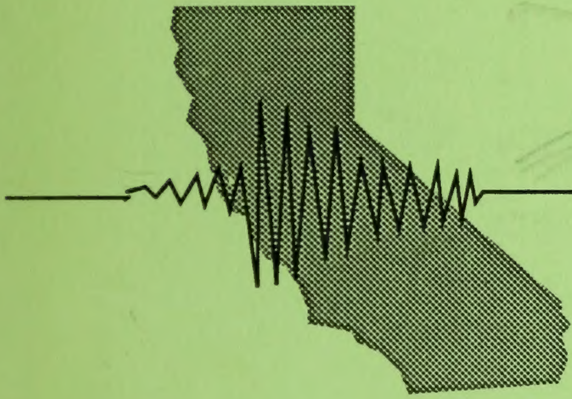

# Planning for the NEXT ONE

Transcripts of
Hearings on the

## Loma Prieta Earthquake
of October 17, 1989

State of California
**Seismic Safety Commission**

## Seismic Safety Commission

The Seismic Safety Commission was formed in 1975 to advise the Governor and Legislature on earthquake policy. It consists of 17 members, 15 appointed by the Governor to represent professions and groups concerned with seismic safety and one each from the State Assembly and State Senate.

**Barbara Cram Riordan**
*Chairman*
*Local Government*

**Alfred E. Alquist**
**(Keith Umemoto)**
*State Senate*

**Hal Bernson**
*Local Government*

**Bruce A. Bolt**
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**Lloyd S. Cluff**
*Utilities*

**Dominic L. Cortese**
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Hearings of the

**a Seismic Safety Commission**

on the

**ia Prieta Earthquake**
of
October 17, 1989

State of California
**Seismic Safety Commission**
1900 K Street, Suite 100, Sacramento, CA 95814
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**Report No. SSC 91-02**

# Introduction

These are the transcripts of the remarks of dozens of state and local officials, media representatives, emergency responders, and citizens who were invited to make presentations to the Seismic Safety Commission regarding their experiences during and immediately after the Loma Prieta earthquake of October 17, 1989. They were asked to tell the Commission how their emergency programs worked; what went right and what went wrong; what problems they had had and how they solved them; what they would do differently next time; and what recommendations they had, for the Commission as regards public policy and for others who will face similar problems in future earthquakes.

The Loma Prieta earthquake killed 62 people and caused billions of dollars in damage to the San Francisco Bay Area. But it may have been a blessing in disguise if California's elected officials, state and local agencies, businesses, and citizens take its lessons to heart and accelerate their efforts to prepare for the damaging earthquakes that will continue to occur in California. Otherwise...

> "Those who cannot remember the past are condemned to repeat it."
>
> —*George Santayana*

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# California Seismic Safety Commission

## Loma Prieta Earthquake Public Hearing

## San Francisco

October 31, 1989
Ballroom, Building 50
Officers Club, Presidio of San Francisco

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**Loma Prieta Earthquake Hearing**
San Francisco
October 31, 1989

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## PROCEEDINGS

CHAIRMAN CLUFF: Thank you.

A few comments before we get into the agenda. As I mentioned briefly earlier, the purpose of this hearing is to gather information that will be helpful to the Commission in its deliberations in terms of assessing the importance of this earthquake and how we can use this information to further seismic safety for the State of California.

We have an agenda that's available, and all the commissioners should have one. And there are extra copies back on the table just at the entrance of the door.

The proceedings of this meeting are being recorded, or this meeting is being recorded, and we will be publishing proceedings from the recordings.

And the procedures for this meeting will be for invited guests who have been invited to give comments on their experience of the earthquake, what happened, what worked, what didn't work, how we can work together in a cooperative fashion to improve our ways of dealing with destructive earthquakes — the way these hearings proceed is that only commissioners will have the opportunity of asking questions of the individuals who have asked to present information, and they will all be limited to about 15 or 20 minutes, including discussion and questions from the commissioners.

We have allowed a place on the agenda for interested parties, citizens, or anyone who would like to make constructive comments that they would like to have entered on the record for this meeting.

So, before we go into the invited guests, I would like to make some opening remarks, and then there are one or two commissioners that have expressed a desire to make a very brief statement.

My remarks are summarized in a two-page note that's available to all the commissioners as well as — there are extra tables back there — copies back on the table.

I want to welcome everyone to this Seismic Safety Commission hearing on the 17th of October earthquake. And while we witnessed a tremendous experience of cooperation and people working together to help us respond and eventually recover from this earthquake, there's a great deal of information we need to do to make further progress toward mitigating earthquake hazards.

Now, it's interesting that this earthquake has been referred to by the media as the San Francisco earthquake. This earthquake is about 100 kilometers from the source of the earthquake on the San Andreas Fault that's just about 20 kilometers northeast of Santa Cruz, in the Santa Cruz Mountains. The name of this earthquake is the Loma Prieta earthquake, named from a local mountain nearby, and the — while this was devastating to localized areas, the earthquake, given its distance and the geologic conditions throughout the Bay Area, was only locally devastating. And it's sad to see the catastrophic failures that occurred in localized areas, but most of the effects that we observed were understood and were expected.

What we're worried about is that, given larger earthquakes on the San Andreas Fault, and particularly earthquakes of this magnitude that might be closer — the San Andreas Fault, as represented on the map behind me, is about 5 miles from San Francisco; the Hayward Fault is about 15 to 20 kilometers from San Francisco — excuse me — yes, 5 miles, and about 15 miles, the Hayward Fault, from San Francisco — given magnitude earthquakes of the size of this one that we just experienced on the 17th of October, we would see much more localized, again, damage in San Francisco. And at this hearing, we want to focus on the effects in San Francisco.

We will be having additional hearings in other parts of the Bay Area, in Oakland, in Santa Cruz, in San Jose, and then back here in San Francisco, and this will all take place over the next two weeks.

Well, what we're dealing with is the ability to assess what level of safety we're willing to pay for, and that means we must be willing to accept some level of risk. There's no such thing as absolute safety. And based on inactions that have taken place thus far, one could say that the level of earthquake risk that existed in the Bay Area prior to this earthquake was acceptable. Now, that's up until the earthquake occurred. Now we look at the damage and the effects, and everyone says that level of risk is unacceptable.

The Commission has been conducting hearings over the last few meetings, and we have — we had a workshop in our meeting in Los Angeles last month, the topic of which was the level of earthquake safety or earthquake risk that we should be establishing for the State of California. And it's one of the objectives of this Commission to develop some policy statements for the governor and the legislature that defines the levels of earthquake risk that we think are reasonable.

So, back to the purpose of this hearing. We want to solicit comments that will contribute to the process of identifying, understanding, and upgrading the earthquake hazards in our communities to increase our level of safety. And we've selected a knowledgeable — several knowledgeable individuals to present information on their views of what happened, what worked, what didn't work, and how we can improve this process so we can be better prepared for future damaging earthquakes.

And as I said earlier, we've allowed time for other individuals if they care to make constructive comments.

Are there other commissioners that would like to make a brief opening statement?

COMMISSIONER BOLT: Yes.

CHAIRMAN CLUFF: Commissioner Bolt.

COMMISSIONER BOLT: Thank you, Mr. Chairman.

I just want to say a few words about this earthquake, which we call the Santa Cruz Mountains earthquake, by some the Loma Prieta earthquake. As the drama and, for many, the tragedy, after the 5:04 p.m. main shock unfolded on Tuesday two weeks ago, I was struck by many events. The steady and informative behavior of our local radio and TV personnel was outstanding. The atmosphere was calm, concerned, and professional: "Look in the front of the telephone directory for advice" — an item suggested by an earlier Seismic Safety Commission, by the way.

As time went on, there was more and more evidence of understanding, thoughtfulness, and rational actions. Responsible officials and the general public behaved very well indeed. All the positive things, society's fine behavior, the general lack of damage, and the few fatalities, if we except the concentrated tragedy of I-880, owe so much to the band of dedicated persons, public officials, certain political figures, engineers, educators, and others, who have given so much time and effort, often pro bono, to the task of reducing earthquake risk.

Perhaps I'll be forgiven for remarking that the commission and staff of the Seismic Safety Commission — the commissioners and staff of the Seismic Safety Commission have contributed mightily to these many successes.

On the other side, my impression is of much remaining to be done, more education, more resources, and optimization of effort, more thoughtful ways to remove the great threat from weak structures. We must invest well now to save economic ruin and great burdens in the future.

This was not a Bay Area earthquake. The end of the 40-kilometer rupture zone in the Santa Cruz Mountains was 70 kilometers away from the Marina and from I-880. The peak accelerations at the University of California at Berkeley on Treasure Island were less than 10 percent of gravity. On the other hand, near I-880 in Oakland, the motions were up to 30 percent of gravity, indicating local amplification conditions.

This earthquake did not seriously test the majority of structures in the Bay Area for a stronger, more sustained shaking from a nearer source. We have had a warning in this great metropolitan area. Let us learn from the experience.

Thank you.

CHAIRMAN CLUFF: Thank you, Commissioner Bolt.

Other commissioners?

We have allowed time, and we understand that there are some State Senate and Assembly members that plan to be here, and they would like to make a statement. Do we have any of those members here presently?

Okay. They haven't arrived yet.

What we'll do — this is going to have to be a very flexible hearing, in that we've tried to set an agenda and notify people when they could come. Mayor Agnos indicated that he would be here at 10:30, and so, when he shows up, we will try to adjust things to accommodate various people when they arrive.

And I'd ask our Executive Director, if we have some people that are later on the agenda, that we could start first.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, I just checked the sign-in list, and if there's one of the speakers who has not signed in — you know, you could identify yourself. But at this time, I don't think our speakers are here.

If you have a moment, I'd like to maybe bring the Commission up to speed as to what's happening in Sacramento, if —

CHAIRMAN CLUFF: All right.

EXECUTIVE DIRECTOR TOBIN: I had hoped they'd have a chance to talk about that anyway.

CHAIRMAN CLUFF: Let's do that.

EXECUTIVE DIRECTOR TOBIN: As you probably all have heard, the governor has announced that there will be a special session of the legislature beginning on the 2nd — that's this Thursday. And that's the reason why we've postponed tomorrow's hearing by the Commission, so that we would have an opportunity to be in Sacramento, since there is a lot of effort going on at this time to draft legislation to, first, provide for relief funds from the state, as well as to address other issues that the legislature and the governor have found germane to this special session.

The special session has been called for three days. It'll be Thursday, Friday, and Saturday. During the last week, the legislature has appointed five task forces to cover different aspects of the earthquake. The task forces are made up largely of their senior staff members, not following existing committees, joint houses, where they've been gathering the facts to provide the information for that special session that's going to be held.

The Commission staff has been called on to provide details in a number of areas, and I cannot tell you at this time whether or not any of them will be addressed by the — during the special session, because that's really subject to agreement in terms of what would be on the agenda. But the Commission has certainly suggested that there be an extensive Commission-led comprehensive report on this earthquake that would come out in about a year, so that the lessons of the earthquake are well-documented, something akin to the landmark report on the 1906 earthquake, or the lesser, but still very important effort, the Commission's report on the Coalinga earthquake.

The policy issues are ones that will need to brought out. The studies that are undergoing that'll be financed by the federal government, the National Science Foundation, the U.S. Geological Survey, and others will largely be on the technical and scientific aspects of the earthquake, but the — we want to make sure that the political, or the public policy issues are also brought out.

There is great interest in the Commission's bill, Senate Bill: 1250, carried by Senator Torres. That bill, as you recall, provides a general obligation bond measure for the statewide ballot. The money is to be used for strengthening state-owned buildings and to create a matching grant program to local governments for strengthening the essential services buildings at the local government level.

That bond measure, as it presently exists, has $300 million in it. Senator Torres has asked that we provide new language to provide some more details and to increase that to $1 billion. I'm hoping that the special session will be able to take up that measure and provide it — put it on the June ballot, if not earlier, if there happens to be a special election for any purpose.

The Commission has been asked by a variety of legislators to work out a number of other details to deal with bills that the Commission has proposed in the past. And I would expect that, if not the special session, the January session of the legislature, we'll see historical numbers of earthquake-related legislation. There's going to be a very important emphasis on the Commission at that time.

As you all know, we view the period right after earthquakes as sort of the window of opportunity, when the private sector and local government and state government is willing and able to deal with the policy issues raised by earthquakes. After the 1971 earthquake, that window of opportunity lasted for about three years. It was in 1974 that the Commission was created. So, I would expect that this window of opportunity after this earthquake will also last for a number of years. And from these — during these next two years, I mean, I hope that the Commission will be able to place into statute all of the aspects of our five-year program and to begin the hazard reduction efforts in California, really in earnest, once and for all.

Mr. Chairman, I don't know if there are any questions, but I think that probably Commissioner Umemoto or Commissioner Pestor has some more details on the special session, and you might want to mention that.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Well, Keith is —

CHAIRMAN CLUFF: Or Keith? Do either one of you want to add to what Tom's stated?

COMMISSIONER UMEMOTO: There was a meeting yesterday afternoon, or yesterday about noon, between the governor and the leadership that's in both houses, Senator Roberti, Senator Manning, Assemblyman Johnson, and Assembly Speaker Willie Brown, regarding a special session, and that's pretty much where they came to announcing that the special legislative session would be November 2nd, commencing November 2nd.

But in the discussion, they pretty much put on the table some specific proposals of what kind of special session package of legislation would be addressed. And what I circulated to the Commission is a listing of actually nine of the items. And it's this document, before you. One other that's added to the list was a handwritten remark of a 13-month 1/4-percent sales tax to generate revenues. It's estimated that that would generate anywhere from $700 to $800 million in additional revenues.

At the same time, I think it's very important for the Commission and everyone else to also take into consideration some of the logistical and legal restraints that are before us as well. The voters voted and passed Proposition 98, which sets aside 40 percent of general fund monies to education. And so, if that is not altered or amended in any way, you're also looking at that $700 million to $800 million, and 40 percent of that would be directed toward education, K-14 education.

Similarly, the Gann spending limitation, as articulated by the legislative analyst, Elizabeth Hill, we're also looking at, pretty much with all the appropriations that are anticipated in the next coming fiscal year because of the earthquake, we may not be able to spend additional funds unless some alteration of the Gann spending limit does take place.

And I think, in terms of those very critical issues, that I think that aren't necessarily widespread among communities in terms of being able to provide relief, that certainly those are considerations that have to be made before us.

CHAIRMAN CLUFF: Randy, did you have additional comments to make?

COMMISSIONER PESTOR: Well, one thing I thought that was positive, at least, in the Chronicle this morning, it was reported that something that was on the table yesterday was the issue of bonds for, you know, rehaBBIing university buildings, which I think was really good.

We got language to legislative counsel yesterday on the investigation of the earthquake, so that would be one of Assemblyman Cortese's bills, $250,000 for that study. Also, for parks, because right now, under the state law, parks are specifically excluded, so we have to delete that, and I notice that's on the list that you have, Keith, here. Some way of coming up with an assessment district procedure, I think, as everybody knows, Senate Bill: 1088, Senator Mello's bill last year — or this year — was vetoed by the governor, which would have allowed Mello-Roos bonds to be used for retrofitting structures. And I think there might be something along the lines of that that would be attempted.

We have gotten a lot of calls because of Cortese's bill two years ago that would have required the bolting of structures to foundations, because a lot of houses did slip off their foundations. And so, we're putting together language now so that, at least when a house is — when there's a transfer of title on structures, that the owners will know whether or not the house is bolted to the foundation and the strength of the cripple walls.

I think that one thing that the Commission may want to focus on today as people are speaking — I notice it's on the special session proposal — and certainly, Keith and I have heard this, you know, around the capital — is the — is the exemption from CEQA, the California Environmental Quality Act, and from other permitting agencies. And if this is on the table, I think that the Commission ought to consider what effect this has on those structures that are — that may be, quote-unquote, "fast-tracked," because there may be a lot of issues that were not considered when these structures like the 880 freeway were built, such as soil conditions and so on. And if we fast-track this so fast that we don't go through the BCDC process and California Environmental Quality Act, we may end up having a structure very quickly — we may have it six months sooner than we otherwise would have, but we may have not analyzed some of those effects sufficiently, and we may be revisiting this disaster again in ten or twenty years.

So, those are just some thoughts. Thanks.

CHAIRMAN CLUFF: Fine. Thank you.

Any questions or further comments from the commissioners?

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: Could we have a list of the committees that the governor has set up, sometime soon, so that we know who would be on those and what their tasks are? Is that available?

CHAIRMAN CLUFF: If we can ask the staff to tell us what those are and provide us a list of those.

EXECUTIVE DIRECTOR TOBIN: Do you mean the task committees that the legislature had set up?

COMMISSIONER BOLT: Yes. Oh, I thought it was the governor that had set it up.

EXECUTIVE DIRECTOR TOBIN: No. The task committees — I'll need some help on this, but there's one on public facilities, and one on transportation. Now, the other —

COMMISSIONER PESTOR: Local government.

EXECUTIVE DIRECTOR TOBIN: Local government.

COMMISSIONER PESTOR: Small business, and I think — I think that covers it.

EXECUTIVE DIRECTOR TOBIN: And housing.

COMMISSIONER PESTOR: And housing, right, because housing is a big gap.

The other thing, too — I mean, that came up yesterday. They're putting the list together, and we've been involved in most of those task forces in putting together this package.

COMMISSIONER BOLT: Are they professional people on the task forces?

COMMISSIONER PESTOR: Oh, yes.

COMMISSIONER BOLT: Yes.

COMMISSIONER PESTOR: They have the committee staff from both the Senate and the Assembly, so we're participating in that process and in some of the leadership.

The reason why this is not going to be as much of a complicated process as it was two years ago after the Whittier Narrows earthquake, is the legislature enacted the so-called Campbell-Torres-Cortese Disaster Assistance Act amendments in 1988, which set up a process for natural disaster assistance. So, we don't have to come back this week and enact a whole, you know, ten bills on a disaster assistance program. That is in the law, and right now the governor just has to drop that money into the different accounts, assuming the money's there and it can be allocated appropriately.

So, I don't think that it'll be as complicated. We mainly have to cover housing and, because of the limited transportation funds, the transportation situation.

CHAIRMAN CLUFF: Thank you.

Further comments?

Yes, Commissioner Waste.

COMMISSIONER WASTE: Just one, Mr. Chairman. I think it should be noted for the record that membership on the Commission does not exempt one from watching an earthquake up close, and that some of us on the Commission are going to view with renewed interest our work here, having had a front-row seat at the performance a week ago.

CHAIRMAN CLUFF: Right. I thought, while we have a little time, I might describe in a bit more detail what I've been doing since the earthquake, and to fill in some time until some of our speakers show up, I will do that and give you the opportunity to do the same thing.

But before we move to that topic, there are activities at the federal level. Some actions have been taken to make new money available to study the effects of this earthquake. And our executive director, Tom Tobin, and the former chairman of the Commission, Bill Iwan, and myself have been involved in providing input to those activities. And I would like to ask Bill Iwan, our commissioner in structural engineering, to summarize some of those activities and what the Commission's role is likely to be.

COMMISSIONER IWAN: Thank you, Lloyd.

In addition, of course, to our interest in the response and the recovery and those aspects of the earthquake, we're also interested in things that we can do to mitigate against the recurrence of something like this, or even worse damage in the future. And so we're concerned about research that can be done to help to mitigate against the damage.

At the federal level, it's our understanding that there was just recently passed a continuing resolution by the

Senate which authorizes, we believe, $20 million for research and studies of various aspects of this earthquake. That money will be distributed between various government agencies, including the U.S. Geological Survey, NSF, NIST, and FEMA, to make a variety of different types of studies.

The Research Committee of the Commission, under the chairmanship of the Chairman of the Commission, Dr. Cluff, is meeting, and a subgroup of that committee met last night to see what steps we might take to make sure that the federal government is aware of the priorities that we have as a state for that type of research.

Also, we're hoping that this will be a stimulus that will encourage the state itself to consider greater involvement in the research aspects of earthquake hazard mitigation. And so, the committee, through its — through its various contacts, is doing everything that it can to try to make sure that the type of research that's done will be the research that most directly meets the needs of California, although I'm sure the federal government is also interested in a wider problem of meeting the needs of other parts of the United States as well. So, we'll continue to make an effort to see that that's directed in that way.

CHAIRMAN CLUFF: We've been — I'm sorry — I was doing some other things here — but we've been asked to make specific recommendations and be involved in the decision process of setting the priorities for those activities. You may have mentioned that, but I wanted to re-emphasize.

I need to give a telephone number, here.

(Pause)

CHAIRMAN CLUFF: While we have a few moments before some of our speakers that we've invited show up, let me and some of the other commissioners share our own personal observations that are constructive toward understanding this event and future events that we anticipate.

I was in the city, San Francisco, when the earthquake struck, and was able to observe some of the effects directly. And the one thing that impressed me as I was driving around the city and looking and walking through the streets shortly after the earthquake, was the very calm, orderly fashion that everyone was expressing. This is not unusual for earthquakes.

I was in Mexico City, as many of you know, when that earthquake struck in 1985. I was giving a lecture on earthquake hazards. And I observed the same thing there, the man on the street took responsibility to save his fellow man, help them dig with their hands to rescue various people.

And I think one observation that struck me very clearly within an hour of the earthquake, as I was walking along California Street in the Financial District, as I saw piles of glass on the street and sidewalk, and debris from the buildings — parapets had fallen, and so forth — and on each block, there was concentrated locations of glass that had fallen maybe twenty stories and struck the sidewalk. And I asked a policeman, I said, "What's happened to the people that must have been struck by this debris?" And he said, "Thank God for the World Series," that were beginning to start at the time of the earthquake, because there was hardly anyone on the streets of San Francisco or our major metropolitan areas because of the beginning of the third game of the World Series.

In the studies that we've done in assessing the potential for losses, we had identified between 4:30 and 5:30 as the time when we would have the worst casualties, deaths and injuries, because of so many people on the streets of the downtown parts of our cities in the Bay Area that will have falling debris and glass and so forth. And we probably would have had several times more deaths and injuries had we not been in a situation of — a unique situation of two Bay Area teams playing in the World Series.

Again, as several people have mentioned, and as I said in my opening remarks, the calm and unpanicked leadership expressed by everyone, the common person, the public officials, the news media and so forth, I think it's just tremendous. And we need to learn from that and enhance those activities for future events.

This was, in my opinion, a good dry run to remind us of the lessons that we need to learn and relearn, leading to what I think is a very high-probability event that we need to deal with, and that's the Hayward Fault earthquake that we are anticipating, a rupture on the Hayward Fault for about 30 to 40 kilometers, of about magnitude 7, and that earthquake will be centered directly in the East Bay and it'll be a direct hit rather than a near miss, like this one was. Direct hits always create a lot more havoc and do a lot more disruption because they do select those weaker structures and cause them to collapse.

Let me just give you the benefit of my own personal observations. I was able to arrange for a helicopter immediately after the earthquake, and at the break of dawn Wednesday morning, I spent the entire next day in a helicopter surveying the damage from Monterey to San Francisco, throughout the Bay Area. I didn't have time to land very often, but I did observe the places that I'd heard on the news where there had been a lot of damage, Santa Cruz, Watsonville, the San Jose area, and, of course, the Marina District and over in Oakland.

And then, the executive director, Tom Tobin, and I, two days later — or three days later, were able to go on another helicopter reconnaissance, making more detailed stops at certain locations and making observations and taking photographs. And we will share that with other Commission members when we get all the data put together.

But let me just give you the benefit of my own personal observations. I've looked at some 25 earthquakes in my career like this one, all over the world. And we were very lucky. Lucky — well, one makes their own luck — I don't want to say it's pure luck. We've done a lot of good things in California, and because of the actions of this Commission and the legislators and the governor and other decision-makers, a lot of things that have been done kept us from having truly a devastating earthquake everywhere.

The modern buildings in downtown San Francisco, San Jose, and Oakland and other metropolitan areas survived very well, although, as Commissioner Bolt mentioned a while ago, none of our facilities were truly tested, because this was a near miss, as I mentioned earlier, in that the earthquake occurred some roughly 90 to 100 kilometers southwest of San Francisco.

And so, we are very fortunate that we do have the strongest earthquake codes in the world. Our structural engineers are among the very best, and we've done an excellent job of providing the kinds of structures and the design that's needed to resist these kinds of forces.

But we learn from every earthquake. The Mexico earthquake taught us again the importance of the resonance effect of certain buildings. Certain buildings with natural frequencies that are in tune with the dominant period of the earthquake can be hard-hit, and we need to refocus a lot of our interest in making special research studies on important buildings in the Bay Area that might have that effect.

Locally, the geologic conditions did contribute significantly to the damage and liquefaction. The Marina District is an excellent example of when — of a location where an old lagoon had been filled in with sand, marshy ground with dump fill, not engineered fill — engineered fill, by the way, in this earthquake, came through very well — but dump fill of sand with saturated conditions is always a geologic condition that, with a strong earthquake, produces liquefaction.

And on the map behind me, if you have a chance at the lunch break, take a look. I've noted the locations that I've observed liquefaction, which was quite widespread. And when there were engineering structures nearby, that liquefaction had a fairly profound effect, and out of all the geologic effects, that seems to be the most prevalent. So, it's going to refocus our efforts and research on the importance of liquefaction.

We now have one of the invited guests, Senator Milton Marks, who we have invited to make some comments and observations and tell us and recommend to the Commission what we should be doing, what he's learned, and what works and what doesn't.

And, Mr. Marks, could we — oh, yes — I'm sorry — you were behind the podium — welcome to this hearing.

SENATOR MARKS: Thank you very much. I'm delighted to be here. I appreciate the opportunity of being here to talk about some of the concerns that I have relating to the violent earthquake that has not only shaken the region, but has taken the lives of so many. I'm deeply saddened by the loss we've suffered. However, each of us knows this could have been worse.

San Francisco can be proud of its police and fire departments and the immediate response of the Red Cross, Salvation Army, the California and San Francisco Conservation Corps, as well as the many other volunteer agencies and individuals who answered the urgent need to provide assistance to victims of the earthquake. It was remarkable.

Prior planning and preparation such as last August's Response '89, which the State Office of Emergency Services, Seismic Safety Commission, FEMA, and many others, participated in a comprehensive earthquake simulation were vital factors in how well we have responded. Today we're here to assess the efforts, both good and bad, and look for ways through which to improve the response and better protect ourselves in the event of another earthquake.

Here are some of my concerns:

The human element in an earthquake disaster is critical. Again, I can think of no more helpless a feeling than experiencing the violent motion caused by a quake when a big one comes. Individuals and families are left on their own for hours, if not days, until transportation, communications, and utilities can be restored.

What are the short- and long-term psychological effects of this quake? What can the state do to improve our mental health response? We must help people in this area. We've already held meetings, and we must share the results.

A suitable number of rooms serving San Francisco's homeless and low-income families and individuals were lost during the quake. The poor and already disenfranchised are hardest hit by this natural disaster. I'm quite concerned about our ability to provide more temporary and emergency shelters and expand the already-existing shelter operations. What will our response be as more of these buildings are condemned?

Although all businesses have been affected by the quake, those businesses that rely heavily on foot traffic and other support services are hard-pressed. Can we provide more short-term emergency assistance and enact a supplemental assistance program that goes beyond what the federal response has been?

A special session of the legislature will convene this Thursday — which I called for — I asked Senator Roberti to call this special session, and I'm glad the governor has called it — convene to address the needs of individuals, businesses, and local governments affected by the earthquake. At that time, I'll push to make certain that there is Senate response to these concerns and business and emergency relief to those without shelter, others hardest hit by the disaster, as well as those ineligible for other forms of assistance.

Specifically, for the committee here today, is the Hazardous Building Mitigation Program adequate? What should be done to improve this particular program? Have you ever looked at the double-tier structure of bridges and highways? What were your recommendations to the governor about these? What are the plans for historic buildings not covered by the grant-loan program? Can we request an independent body to review those buildings, immediately review those buildings of historical significance in order to make certain that there are no other alternatives to condemning the buildings, keeping safety in mind?

We cannot rush in demolition the way Cooper House, the soul of Santa Cruz, is being destroyed. We must preserve the character of our Marina, and try with all effort to save our library, the post office, as well as other buildings that are part of our vibrant heritage.

I hope you will complete your report in all haste. Thank you very much.

CHAIRMAN CLUFF: Thank you.

Would you be willing to respond to some questions from the commissioners if they have any?

SENATOR MARKS: Sure. Sure.

CHAIRMAN CLUFF: Yes. Commissioners, would you like to —

EXECUTIVE DIRECTOR TOBIN: Senator Marks, you brought up an extremely important point, I believe, about the rapid demolition of some of our buildings, especially those of historic character. And I know that you've taken a position of leadership in the past and authored the legislation for the State Historic Building Code a number of years ago.

I think it's important that historic buildings and buildings with special significance are treated — before the earthquake, are treated with aggressive programs. I was wondering if there has been any support from the preservationist groups that I know that you work with for beginning a program to address the strengthening of historic — qualified historic buildings.

SENATOR MARKS: Yes, there has been. An historic group that I work with has worked very closely to try to help in the restoration and maintenance of historic buildings and keeping them going. But I'm not referring so much to what has been done as to what is going to be done, what may be done. We are — I'm concerned with the destruction of historic buildings that may come about which could be preserved by proper maintenance, proper reconstruction. I'm concerned about the destruction of buildings which I think are important to all of us for our heritage, and I'm concerned about that.

EXECUTIVE DIRECTOR TOBIN: I would agree. The chairman and I were in Santa Cruz just a few days ago and saw the Cooper House and how — and then, most recently, saw on television that it's being torn down, and I guess, by today, it's been leveled. So, it's a great loss.

SENATOR MARKS: And I think — I think it was wrong. I think that's definitely wrong to destroy historic buildings which are historic, that relate to the history of our state.

COMMISSIONER McCARTHY: Senator, do you mean these buildings are destroyed by the earthquake?

SENATOR MARKS: I'm saying that there are buildings which have been damaged by the earthquake. And those buildings which are historic should not be destroyed, should not be torn down.

CHAIRMAN CLUFF: I think — let me make an observation here that relates to this. There's an issue — I think this brings up an issue, and it is the decision process and what criteria are used to decide on what happens to a building that's been significantly damaged. The one that Tom mentioned that we observed in Santa Cruz was significantly damaged, but it was still standing, and I would guess — we didn't go inside it, but I would guess that there could be measures, expensive as they might be, that could save some of those buildings.

And it would seem to me that we need to have a process that is not so — implemented so quick that all of a sudden, we tear down buildings — and this relates to another issue that has to do with — with people's houses or apartment buildings that are seriously damaged and may need to be torn down, but what is the decision process, and what's the best way to allow people to extract their belongings?

It seems to me that we need to relook at that issue or address that issue in terms of some people were only given fifteen minutes to extract whatever belongings they had, when an assessment of some of those buildings, even though they were seriously damaged, they might have been only a small amount of risk to allow people much more time to retrieve their belongings before they razed the building.

So, it's the — the issue is the decision process and how decisions are implemented to tear down buildings after they're significantly damaged.

SENATOR MARKS: I would think a building such as this we're in today, this is a probably historic building. If this building were damaged, it should not be destroyed. I'm concerned about the destruction of historic buildings which are so important to the maintenance of our society.

CHAIRMAN CLUFF: Commissioner Scott?

COMMISSIONER SCOTT: Well, are there historic buildings here in San Francisco that were damaged and that, in your view, may be in imminent danger of actually being torn down?

SENATOR MARKS: Yes, there are. There are some buildings in San Francisco which are historic buildings which are in danger of being torn down. And I think — I'm concerned about that.

CHAIRMAN CLUFF: Commissioner McCarthy, did you have some additional questions?

COMMISSIONER McCARTHY: Well, I — I wanted to say that, you know, I think we're on your side, but we would rather strengthen those buildings prior to an earthquake. And that's really — really the thrust that we're — where we're coming from.

SENATOR MARKS: Well, the problem is that the earthquake has occurred. We cannot strengthen them now.

COMMISSIONER McCARTHY: But, Senator, this isn't the last earthquake, you know. This is the most recent, but it's not the last.

SENATOR MARKS: Well, I realize that. And therefore, if you mean that we should do it before now, I agree with — we should strengthen them.

COMMISSIONER McCARTHY: Yeah, that's — I'm glad to hear you say that.

CHAIRMAN CLUFF: Yes, Randy?

COMMISSIONER PESTOR: I just wanted to point out, on Tuesday when I was in a meeting in Oakland on some of the transportation issues here in the Bay Area, I stopped by the California Preservation Foundation. They put together a nice, you know, 8-page flyer here, and their phone was ringing off the hook. There was people complaining about historic structures being torn down. Even the Caminos Hotel in Salinas — in Salinas, where Steinbeck went frequently, even the building owner said that he was willing to rehab it, and they had an engineering report that said that, you know, it could be rehabbed, and the city still tore that structure down.

There are a number of CEQA attorneys that are involved in this issue now because a number of jurisdictions are using the emergency exemption to tear these buildings down without complying with the — with the Act. And I'll see that some copies of this are made for the Commission. They do mention some of the mechanisms that can be used to preserve some of these structures, even before an earthquake.

And I think the Senator deserves a lot of credit, because the first thing they mention here is using the Marks Historic Rehabilitation Bond Act of 1976. So, the Senator has already done a lot, you know, thirteen years ago, to see that there was a bond act in place to take care of some of these problems. And they're recommending that this be used, along with some other procedures, to get the community involved with the city councils early in assessing these buildings, without just going in and tearing them down without any kind of analysis.

CHAIRMAN CLUFF: Further comments or questions by the commissioners?

Senator Marks, thank you very much.

SENATOR MARKS: I thank you very much, and I wish you every success in your meeting.

COMMISSIONER McCARTHY: I'm curious, Senator. Have they begun to tear down some of these buildings, or are you anticipating this is going to happen very soon?

SENATOR MARKS: I think that they've — they're starting to. They're starting the process of tearing down some of these buildings. I think that — I don't know how far they've gone, but there is a process being started of trying to tear down some of the buildings. And I think that what I'm trying to do is preserve the historic buildings to the fullest extent possible, because those buildings are irreplaceable. They're absolutely irreplaceable. There's no way in which you can replace an historic building which has been torn down.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, at our subsequent hearing, either here in San Francisco on the 9th or in Oakland on the 8th, we will call on the California Preservation Foundation to speak to the Commission and delve into this issue in a little more detail.

SENATOR MARKS: Thank you very much. I appreciate being here.

CHAIRMAN CLUFF: Thank you, Senator Marks. Thank you.

Let's see. Do we have other speakers now?

Lou Turpin, of the San Francisco Airport, manager of the San Francisco Airport, is here.

Mr. Turpin, could you come up to the table or the podium, whichever you choose, wherever there's a microphone, and give us your comments? What we're interested in, since you just arrived, is hearing what you have learned, lessons that are learned, and what worked, what didn't work, and how can we as a Commission work with you to improve our earthquake safety in California.

MR. TURPIN: Thank you, Mr. Chairman.

I do have a short video that I thought I might permit to run, with your permission, while I was making my comments. It was taken shortly after the earthquake at San Francisco International Airport and gives a good visual of the amount of damage that was suffered, particularly in the terminal building. I don't know if we're — if we can do that —

CHAIRMAN CLUFF: I don't think we have —

EXECUTIVE DIRECTOR TOBIN: Well, there's a monitor.

CHAIRMAN CLUFF: Oh. We have a monitor there.

MR. TURPIN: They had indicated they might have that capability, but I don't —

CHAIRMAN CLUFF: Okay. Why don't you give that to someone, and they'll start working with that?

MR. TURPIN: Thank you.

CHAIRMAN CLUFF: And you can continue with your comments, and we'll come back to it.

MR. TURPIN: Thank you, Mr. Chairman.

Very briefly, Mr. Chairman, to set the stage for our experience with the recent earthquake, San Francisco International is the seventh largest airport in the world. We have approximately in excess of 200,000 people there daily, equivalent population at the airport, over 1,300 flights — that's take-offs and landings by commercial aircraft daily, about 40,000 to 45,000 vehicle trips per day at the airport. There's a significant amount of activity which takes place in a relatively confined area. And, of course, the fact that we have about 2,200 acres is good. The fact that it's on fill is not. And we've had to — had to contend with that as we — as we've developed the over the years.

Shortly after the earthquake hit at SFO, these were the impacts: About 80 percent of the terminal floor area was covered with debris. Now, our terminal floor is about 2.75 million square feet. We lost all power to the airport. The structural status of runways, terminals, and the central parking garage, which handles about 7,000 vehicles, was unknown. There were approximately 25,000 to 30,000 persons on the airport property at that time, including employees and passengers, meeters, greeters, et cetera.

We had several simultaneous injury reports. However, the airport does have a medical clinic. The earthquake occurred at shift change, and we had three physicians and six registered nurses on duty at that time. There were reports of tower — damage to the control tower, as well as injuries in the control tower. All incoming aircraft were automatically diverted. We had multiple water line breaks, both in and outside the terminals. And we had reports, initial reports, of gas leaks, fuel spills, unknown material spills, as well as fires from various locations on the airport. We lost primary telephone capability as well as radio communications, because the earthquake knocked out the repeaters.

Our initial — our initial response, obviously — to digress momentarily, San Francisco International Airport has, for the last seven or eight years, conducted annual earthquake exercises, and these have been fairly — relatively — or very exhaustive exercises. And the scenario we have used, interestingly enough, is the assumption that there would be a 7.5 earthquake at 5:45 p.m. And that has been the continuing scenario that we've used over the past six or seven years. I think that — that scenario and that repetitive training put us in an extremely excellent position to respond to the earthquake.

One, we activated the emergency command post and activated backup telephone and radio communications. We also have portable repeaters at the airport, and we have a three-level — actually, a four-level redundancy on our communication systems, so when we lost the first two, we activated Level 3 and Level 4 both. We had simultaneous responses to medical problems as well as fire and reports of gas leaking.

We only had — when one considers there were about 30,000 people at the airport, and when one sees the damage that — or the debris that was in the terminal buildings, we only had four medical problems, and I'll categorize two as medical injuries, if you will, and two as related. We had a heart attack. We had a person trapped under debris. And we had two women who went into labor. And, obviously, one of our first priorities was to respond to their needs as well.

Fires were relatively minor. No fuel spills were experienced of any — of any moment. Reports of, quote-unquote, "chemical spills" were not accurate. However, there were materials spilled, but they were not hazardous materials. Broken pipes were immediately secured.

The plan that we have at SFO tries to get everybody who's there to do the first two things. If everybody does the first two things on their checklist, we're in pretty good shape. So, we immediately cut all the gas, shut off all the steam, cut off all the water, to try and minimize damage to the facilities.

We did — we did, in this first hour, if you will, from 1704 to 1800 hours, have an opportunity to take a look at the airfield, and found it to be structurally sound. There was no failure in the airfield, no failure in the fueling — at the fuel farms, or in the hydrofueling systems. So, we could have continued to operate. However, we did suffer damage in the tower, and our plan requires that all aircraft be diverted automatically whenever there's an earthquake, until we ascertain that we can restore operations.

We immediately evacuated, obviously. All the terminals were evacuated immediately. Persons were taken outside the terminal facilities. We began as soon as possible to take a look at the terminals. We actually triaged the terminals. After we ascertained that our medical problems were, fortunately, extremely light, we actually did a triage on the terminals.

San Francisco International Airport, for those of you who are not familiar with it, is an airport with a horseshoe-shaped terminal system. It has a north terminal, has a right terminal — north terminal, south terminal, and a central terminal, and in the middle of that horseshoe is a 7,000-vehicle, five-level reinforced-concrete parking structure.

We immediately looked at the terminals and determined that the north terminal suffered the most severe damage, the international terminal was second in terms of debris, and the south terminal suffered the least. So, we started with the south terminal, did a structural check of the south terminal, determined it to be safe, and continued with the structural checks, followed with employees, not only City and County of San Francisco employees, but airport employees, airline employees, everyone who was there, chipping in to help clean that terminal.

So, what we did was we worked from south to north doing structural inspections, cleaning the terminal facilities, and at the same time, we made every effort to, one, get everybody off the airport that we could and get them home, if they were domiciled in the area; number two, to find places for people who were on the airport, in terms of accommodations; and number three, the remainder, set up something at the airport, which we did in the south terminal, for their comfort.

I closed the airport at about 1745 until further notice. That not only included the airfield, but also included the land side, and we denied access to anyone from the land side area. Clearly, our goal was to try and, one, accommodate everybody who wanted to get home, and to get them off the airport, and to accommodate those people who couldn't get home because they weren't domiciled in the Bay Area.

At 1800 — between 1800 and 2100, we were able to recover the south terminal, at which time we moved people from the courtyards, which were prearranged staging areas —these are areas outside of the airport on either end of the terminal buildings, the west side of the north and south terminal — moved them into the south terminal, provided blankets, cots, pillows, and we had the commissary, which is located on the airport, provide food for these persons, as we continued our clean-up effort.

By 0100, we had repaired the tower to the extent that we felt that we could resume accepting aircraft. Our goal was not to open to commercial operations, but simply to accept aircraft for the morning bank. We were looking at this not as a commercial venture, but as a requirement. There were an awful lot of people away from the Bay Area who wanted to get to the Bay Area, and there were an awful lot of people in the Bay Area, obviously, who wanted to get home. We felt that it was imperative, as a primary transportation link, to open as soon as possible, if safety would permit.

Clearly, what we had going for us was a plan. We had facilities which responded as they were designed to respond, fortunately, and there was no structural damage to any of the terminal facilities. And this permitted us to start accepting aircraft at 0100 on the morning after the earthquake, on the 18th. At 0500, we opened the land side area to the public for access, and at 0600 we restored commercial operations.

75 percent of the terminal facilities were operational by 0600 on the 18th. 50 percent of our capability for the landing and take-off of aircraft was restored by that hour, the problem being that we lost a major piece of glass in the control tower, and when it exploded, the noise from the airfield was so great that we had to literally spread out operations, because controllers could not hear, you know, with their normal — the normal degree of, if you will, insulation in the facility was gone. They simply couldn't hear them, so we increased spacing on aircraft in order to ensure that safety margins were maintained.

By late in the day on Wednesday, we had recovered most of the north terminal, and we had replaced the glass in the control tower, admittedly not as it was originally, but reduced about 90 percent of the noise. And by 0600 Thursday morning, about 36 hours after the earthquake, we were 100 percent operational on the airfield and 100 percent operational in the terminal facilities.

I think — I think that the response was successful, for several reasons. One, of course, the buildings performed as they were designed to perform. The north terminal was built in 1979, completed and opened in 1979. The international terminal was rebuilt in 1983, and seismic protection up to standard in 1983 was added. The south terminal was modernized in 1988; the completion was in 1988. The garage was completed in 1982, so, clearly, our facilities were — were designed, if you will, in the relatively recent past. That was very, very helpful.

The airfield reacted well. And in great measure, it's an empirical situation with the airfield. We have flexible pavements. The airfield does float. The airport's probably 60 percent bay fill and about 40 percent what I'll call relatively undisturbed soil, if there is such a thing along the coastline of the bay. So, the airfield responded extremely well, and there were some — there were some concerns in that regard.

We did lose one facility. We lost a cargo building. It was determined to be unsafe, and it is being demolished at this time.

Clearly, the timing — the timing was fortuitous, because we had a number of persons at the airport who immediately either — if they were in their car or if they had just walked out of their office, turned around and responded. We had tremendous support from the airline community. We had tremendous support from ex-airport employees. Persons who used to work at the airport and retired called up and said, "Do you need us? We'll come back. You know, we're not looking for anything other than our ability to help." So, we had a tremendous, tremendous response.

I think that the fact that our buildings worked, and that our plan worked, in great measure helped us — helped us restore the facilities as soon as possible. Clearly, we will have a debriefing on this situation. As a matter of fact, it's scheduled for this Friday. And that debrief will take a look at what we did, how we did it, and how we could do it a little better.

One thing I might mention to the Commission, which I failed to mention, in about 1983 — up until about 1983 or '84, we had centralized all earthquake recovery materials at the airport. We decided to decentralize those in '83-84, and we have, throughout the terminal buildings and throughout the airport, metal lockers, and these metal lockers contain everything from crowbars to shovels to hard hats to medical supplies to drinking water, and all the other essentials. These are widely dispersed and — flashlights, et cetera — these are widely dispersed and came in — you know, they were vital to our recovery in terms of the fact that we just opened the doors, and we were — we were able to get into these facilities. Employees were able to get in and get the types of equipment they required.

For the Commission's information, I do have and will leave with the Commission a copy of our earthquake plan. As well, I have a copy — a set of photographs which show immediately after the earthquake and during clean-up, and give some idea to the Commission of the debris. Primarily, debris was plasters falling, plaster popping, plaster ceiling tiles, and, of course, the sprinkler systems did work, to about 4 inches worth of water throughout the terminal facilities. But we feel very, very fortunate in terms of — in terms of our experience, and we'd be pleased to answer any questions you have.

CHAIRMAN CLUFF: Fine. Thank you.

You brought the video. Is that prepared to —

EXECUTIVE DIRECTOR TOBIN: It's working.

MR. TURPIN: It's ready. If they'd like to put it on, it's only eight minutes —

CHAIRMAN CLUFF: How long is it?

MR. TURPIN: It's about eight minutes.

CHAIRMAN CLUFF: Okay.

MR. TURPIN: If we can watch four or five minutes of it, I think, and then turn it off —

CHAIRMAN CLUFF: Sure. Why don't we go ahead and start that?

And then I have some questions, and I'm sure other commissioners would like to ask some.

MR. TURPIN: Fine, Mr. Chairman.

(The following remarks were accompanied by a videotape presentation.)

MR. TURPIN: Now, this video was taken immediately after the earthquake, within minutes, and it continues through the recovery area.

The control tower suffered significant damage, in terms of the ceiling came out, the air conditioning went out, and the glass exploded. We had an awful lot of cuts, abrasions, and bruises and contusions and those types of injuries, but nothing that I would categorize as more than — more than minor injuries, other than the four I mentioned.

Now, this is in the north terminal. You'll notice a lot of the television monitors came down. The building shook significantly, as you see.

(Inaudible comments during videotape)

MR. TURPIN: One employee was trapped underneath this.

(Inaudible comments during videotape)

MR. TURPIN: Water was pouring everywhere.

(Inaudible comments during videotape)

MR. TURPIN: We were very fortunate that we had power. All the emergency generators worked. We had — as the sun went down, we were prepared to restore power at about 1845 hours.

(Inaudible comments during videotape)

MR. TURPIN: We moved passengers to the front and employees to the rear of the airport.

(Inaudible comments during videotape)

MR. TURPIN: This is the international terminal. That whole ceiling will have to come down.

One last thing about the international terminal, the floor is marble, and that floor was put in in 1984 (inaudible) because the carpeting in the north terminal really — we had about 1.2 million square feet of smelly carpet we had to deal with.

This is the control tower. I think you can probably — this is the control tower, and you see the amount of debris. The window blew out, the ceiling came down, the console was knocked over, the air conditioning was gone.

And we have an alternate tower backup system, and we could have operated out of the alternate tower. We made a determination when we shut the airport that we could recover the tower by the early morning hours, and elected not to activate the alternate, but to continue operating through this tower.

We had three operations — well, actually, we had four operations which I permitted between the time of the earthquake and the following — and 1:00 a.m. the next morning. Two were 747's that we filled with people to take to Seattle because there were no hotel rooms in the area, and we shipped them up to Seattle. And a couple of others were — one was an airline flight that came in with employees from another locale, just to assist us in the recovery. And the last was a British Airways aircraft going to London, which was full, loaded, ready to go.

And clearly, one of our early desires was to get as many airplanes off the patch as possible. If we had any significant other activity, our concern was that we really weren't in a position to deal with aircraft-related fires at that time. So, we moved — we moved as many airplanes away as we could and moved as many airplanes off as we could.

CHAIRMAN CLUFF: We'll cut that off. Thank you for showing us that. Let me —

MR. TURPIN: And I'll leave that with the Commission as well for your benefit.

CHAIRMAN CLUFF: Oh, thank you very much. We appreciate that.

You mentioned — I have a couple of questions that I'd like to have you respond to, and I'm sure other commissioners have additional questions.

You mentioned the scenarios that you use in your planning exercise — I believe it was 5:45, was the time that you expected. And my guess is that you must have assumed a much — probably a larger earthquake and at a closer distance in terms of the earthquake occurring. The question I have is, in those scenarios, was the damage — even though it was not structural, was the damage you experienced at the airport expected?

MR. TURPIN: Yes. As a matter of fact — and I'll be happy to leave this scenario with the Commission as well — but, clearly, we talk about ceilings have collapsed, power's out, elevators are jammed and stuff, glass. We — I think everything except the structural damage, if you will, was anticipated in these scenarios which we've developed, or the scenario which we have used as the base scenario.

CHAIRMAN CLUFF: So, you went through a process of deciding what kind of damage that you're willing to accept, and that level of damage was acceptable. That was the process you went through.

MR. TURPIN: I'm not sure I understand the question.

CHAIRMAN CLUFF: Well, the whole thing about looking at earthquake damage before the event is to assess what level of damage you're willing to accept, and that judgment is an assessment of the level of risk that we as a society, or as an organization, whether it be the airport or the City or whatever, is willing to accept.

Now, what we do is look back at that in hindsight, after the event, and say, "Were those the best kinds of assessments or the best kinds of levels of risk that we should accept?" So, I was just wanting to get your thoughts on that.

MR. TURPIN: I — let me say that the scenario that we've outlined here is, obviously, worse than the one we experienced. And I guess that's the best of all possible worlds.

CHAIRMAN CLUFF: Yeah.

MR. TURPIN: We have major assumptions in this scenario of the loss of portions of the airfield, particularly that portion which is the field closest to the bay, on fill.

We have scenarios which assume certain of our facilities are lost. All of our facilities are on piles. All of the facilities are seismically braced. However, we have assumed certain facilities are lost, and how would we respond to that. We have certain casualty collection points, terminal meeting points, et cetera, et cetera.

All of those things went into place. Clearly, we were, fortunately, able to cross out a number of problems which we typically had anticipated in our routine planning. So, I'll leave this with you, and I think you'll see probably 50 — we experienced 50 to 60 percent of what is in this — in this plan. And that's another reason, I think, why we were able to get up so quickly. The structural piece was really key to us.

See, one of the — let me just share with the Commission that our view is, if we can save — if we can get 3,000 feet anywhere on that airfield, we can probably get 130's in and use a relief effort. Further, part of our plan is, since we are on water, that we believe that we can — we can serve the Bay Area over water if we have to, forgetting — we've assumed several things: one, that we're going to be isolated, except for water, and we'll have to use water if at all possible, in any type of relief effort that we can mount, based on us being able to get back into play.

Clearly, our goal is get back into operation, in whatever fashion, to support — to support the region that we serve. And that's what this plan really is dedicated to do.

CHAIRMAN CLUFF: Commission Iwan, you had a question.

COMMISSIONER IWAN: We've said several times here and repeated that we were, in all, quite fortunate in the earthquake. And you had said you were too.

One of the questions that often comes up is what happens with the handling of air traffic in a disaster where you're not so fortunate? I'm just curious, if you'd speculate for us. What if this had happened at a time when it was very bad weather conditions, you were using all ILS systems, and there was, in fact, damage to the runways? What is the — is there a plan that exists? How is the aircraft automatically diverted if you lose power in those conditions? Could you just explain a little bit about that?

MR. TURPIN: First of all, from the airport's and FAA's perspective, the default position is that all aircraft are diverted, all aircraft are directed to execute a missed approach. For example, if on final — our scenarios have assumed that an aircraft was on final and did crash on final as a result of the earthquake, and, clearly, we've dealt with that scenario as well. However, I see that scenario as extremely, extremely remote, for one reason: the entire default system is that the aircraft will not land, that they'll execute a missed approach and will immediately go their alternate.

When the tower was hit, all aircraft operations into San Francisco International immediately ceased. Control was turned over, if you will, to the next higher level, to the FAA. They assumed controls, almost the same as if we'd lost all radar, for example, at the airport. So, from a default position, that's really what happened, and it happened this time and would happen in any case.

I will tell the Commission that any time we have an earth tremor — we had one — I can't remember when the last one was, but we've had several over the last, say, three or four years — any time we have any earth tremor, we, in effect, suspend operations until we can get out and take a look at the operational services and ensure that all operational services are satisfactory for operation. I mean, that's just an automatic. That's as a default position. There's nobody saying, "Do it"; it's done.

COMMISSIONER IWAN: As a follow-up to that, what is the next level of default for the FAA? I mean, you go to the Oakland center, or what —

MR. TURPIN: Oakland, and then beyond that.

COMMISSIONER IWAN: And that was presumably also affected.

MR. TURPIN: Right. Right. And then, beyond that, I'm not sure exactly. I'd like to be able to tell the Commission, and I know — I mean, somebody's mentioned it to me — I just don't remember exactly what that sequence is.

COMMISSIONER IWAN: You're not sure which level it had to be transferred to in this case.

MR. TURPIN: I don't know where it went from there. It did — let me put it this way — I know it did go someplace from Oakland. The question is where, and I'm not sure exactly where.

CHAIRMAN CLUFF: Commissioner Kockelman.

COMMISSIONER KOCKELMAN: Yeah. Mr. Turpin, that was a — you know, an excellent report. I had two quick questions.

One, you said the runways stayed open. How much can you take, vertically and horizontally, as far as the displacement goes? An inch?

MR. TURPIN: No. As a matter of fact, when we — as a matter of fact, we're repaving — repaving a runway — that's hard to say, repaving — that's because I don't want to do it, actually — it's repaving a runway. Our tolerances are 2 percent transverse grade, and you can't have any more than a 1/4-inch — 1/4-inch variation measured in any direction with an 11-foot straightedge.

COMMISSIONER KOCKELMAN: And you — and you sustained none of that on the runways, okay.

The second —

MR. TURPIN: We exhaustively looked at the runways between 5:00 and 5:30 p.m. We again looked at them before we allowed commercial operations, at zero — at first light. We wanted to take advantage of first light, and there were — there was only — there were some minor problems on the pavement, but none on what I'll call operational surfaces.

Off in a cargo area, we had a pavement failure. About a 3-by-10-foot area failed. But that was very localized.

COMMISSIONER KOCKELMAN: Yeah. That's great.

A second question: you said that the sprinkler system worked. Were you being facetious?

MR. TURPIN: Yes.

COMMISSIONER KOCKELMAN: You ruptured the —

MR. TURPIN: Yeah, I was. It worked so well that we didn't even bother to go through the heads; we just went through the pipes.

COMMISSIONER KOCKELMAN: Okay. Now, what will you do in the future, because if you had a fire, you would have been in trouble, right?

MR. TURPIN: Well, the sprinkler system — no, I mean, the sprinkler systems worked. What happened was, with — a lot of pipes broke, up in the ceilings.

COMMISSIONER KOCKELMAN: I understand.

MR. TURPIN: Two things: we're going to take a look at the way those are cross-tied, okay, for future — not only the ceilings, but also the type of tile we're using in the terminal facilities. I'm not sure that the square type tile, which is a tongue-in-groove mechanism which — which, when one goes, you get a domino effect. I think there's a lot —

COMMISSIONER KOCKELMAN: Let's just talk about the sprinklers. Where did you break those? As they go through concrete walls?

MR. TURPIN: No. It actually broke up from the hangers.

COMMISSIONER KOCKELMAN: From the hangers, from the floating hangers that ruptured.

MR. TURPIN: Yes, that's right. That's right.

Not only did it come through the heads, but it also — there was also breaks, for example, and ruptures in the piping where it was through the hangers, coming down from the ceiling, above the false ceiling, as it dropped down there.

COMMISSIONER KOCKELMAN: Do you have any explanation for that, like defective pipe or anything?

MR. TURPIN: Not — well, actually, that's a good question. Not yet, but we've asked our folks to take a look at it from the standpoint, "Was it a design question?" In other words, could we have designed it better? Should we have designed it differently, or was it designed properly? And should we design it differently anyway? And I think that's one of the things we'll be clearly looking at.

COMMISSIONER KOCKELMAN: Okay. Thank you.

CHAIRMAN CLUFF: Commissioner Scott.

COMMISSIONER SCOTT: Just a couple of quick questions related to your comment just now.

You mentioned that the north terminal was damaged significantly more than the south terminal, and you also mentioned that you lost a cargo building. Unless it's premature to ask this question, do you have any ideas as to why the north terminal was damaged more, if it was — maybe it was — beyond, at least, the wet carpet problem?

MR. TURPIN: Sure.

COMMISSIONER SCOTT: And the same thing about the cargo building: did it have anything to do with its basic design or construction?

Maybe it's too early to ask that question.

MR. TURPIN: No, I — let me — let me offer this in a lay capacity, without any — without — you know, I don't want this — let me just offer this in a lay capacity. It appears that the damage almost traversed a line, interestingly enough, from east to west. And it seemed to go through the international terminal, through the north terminal H and I connectors, which are out on the — out on the airfield, through the United Airlines flight kitchen, through a ground support facility, through Cargo Building 8, and up to San Bruno and the PG&E substation.

So, if I were — if I were to say what was the line of most impact, I would — I would have to, at this early stage, draw a line going from the San Bruno Gap — I think we all are familiar with that area, where 380 goes up, that point, actually, down in an easterly direction, from west to east, through.

Now, you've got San Bruno, and I'm not sure what — what, you know, prior seismic activity, hundreds or thousands of years, may have been involved. But clearly, there was — at least, it appears, as you plot the damage, a very definite line of damage running from — in an east-to-west orientation.

CHAIRMAN CLUFF: Yes. Commissioner Eberle.

COMMISSIONER EBERLE: This gets back to the chairman's question on acceptable level of risk. Can you tell me what one or two major lessons you may have learned as a result of this, and follow that up with what plans, if any, you plan to make in either your earthquake scenario or your facilities?

MR. TURPIN: Well, one of the — one of the things that I think we need to address is a more effective way of accommodating — our scenarios have assumed a more cataclysmic effect, and when one assumes that, one can take certain actions as a result of an emergency situation. Clearly, one of our plans, for example, was to commandeer the Airport Hilton Hotel and use it as a medical facility because, one, it's on undisturbed soil, it's an extremely sound structure. We never got to that point of disaster to effect those types of things.

So, we found ourselves almost beyond normal, but not to absolute. And we found ourselves in this quasi-middle ground where it wasn't severe enough to take drastic emergency actions, which we can do, and yet it was severe enough to have to deal with the problem.

So, what we are now focusing on is, again, an intermediate step. We have normal and we have absolute, and I think we're now looking at some type of interim scenario whereby we can accommodate people a little more effectively than we did this time, that we may need a less-than-massive medical care type of facility.

One of the things we are clearly looking at is the rebuilding of Cargo Building 8 to construct that facility in such a way that we can — that will become our intermediate "Airport Hilton," if I can use those terms and if I can describe it in those terms. So, that's — I think that's probably the biggest thing we learned.

We've always planned for destruction and significant — significant personal injury. We're pleased that we didn't have it, but it put us in kind of a quasi-middle ground, where we had a lot of the same problems, but not the justification to take that last step, and nor should we have taken that last step.

CHAIRMAN CLUFF: I wanted to advise you to be careful about relaxing any of your scenarios and so forth —

MR. TURPIN: Yes.

CHAIRMAN CLUFF: — because this was a very distant earthquake, not that big, and certainly San Francisco Airport will be subjected to even larger earthquakes and much closer, either on the San Andreas, which is only a few miles from the airport —

MR. TURPIN: That's right.

CHAIRMAN CLUFF: — and the Hayward, which is much closer than this earthquake. So, please don't start relaxing yourself.

MR. TURPIN: That's a guarantee, Mr. Chairman. I promise that.

CHAIRMAN CLUFF: Fine.

EXECUTIVE DIRECTOR TOBIN: In your lifetime.

CHAIRMAN CLUFF: Right.

Commissioner Waste, you —

COMMISSIONER WASTE: You've given us a very fine report on the airport itself, but you're inextricably tied to the outside world by a lot of concrete spaghetti that goes around in the air. How did that survive?

MR. TURPIN: To the best — well, first of all, from the airport's — on the airport land side, access did survive without, to my knowledge today, any damage.

We assume — our scenario assumes that we will lose the 101 interpass and the 380 interpass, Millbrae — or the overpass, excuse me, Millbrae. Our scenario further assumes that — and we are prepared to then bridge across to Millbrae if we have to, between Millbrae Avenue and the main interchange. We have — we have the ability to bridge across.

One of the things that we have done, the City and County of San Francisco, in our disaster planning with the City, we have assumed, and I think logically, that we will be isolated. San Francisco International Airport, as a geographic entity, will be isolated for some period of time after the earthquake. And therefore, all of our planning has focused on a self-supporting capability, and we've generated our disaster plans in that way.

I firmly believe that, yes, if there were a major quake, we would be isolated for an awfully long time, and we would see water as our — literally, water as our only avenue of contact outside of the airport.

CHAIRMAN CLUFF: Thank you. I think I'd like to move one. We have — even though we're ahead of schedule with the speakers, Mayor Agnos has not shown up yet. We were told he would be here.

Is anyone here from the Mayor's Office?

(No response)

CHAIRMAN CLUFF: Okay. Thank you, Mr. Turpin.

MR. TURPIN: Commissioners, thank you very much.

CHAIRMAN CLUFF: No one here from the Mayor's Office.

We'll have to deal with Mayor Agnos if he does arrive at a later point.

Then we are right on schedule with John McConnell of KGO News, who I've been informed is here. And Gretchen Wells, I suppose, is —

MR. McCONNELL: She's not here yet.

CHAIRMAN CLUFF: Okay. Well, why don't you start off? And if you haven't been listening, let me just summarize very briefly the purpose of why we're here and why we have invited you.

We have invited knowledgeable individuals that have some unique experiences and lessons that we would like to have shared with the Commission so that we can further our efforts to improve the level of seismic safety, for not only the Bay Area, but for the entire state. And so, we'd like you to share with us your observations, what worked, what didn't work, and how we can improve the entire process.

MR. McCONNELL: Okay, fine.

I — as you may or may not know, I just recently moved to the Bay Area. I'm from the San Francisco area. I was brought up here, but I've only been back in San Francisco about two months now, and I have to admit, my timing couldn't have been better or worse. My wife arrived about two weeks before the earthquake, and it's all I can do to ensure that she doesn't go back at this point.

So, I'm glad that things have quieted down enough to tend to some of the things that we all were not able to deal with during the earthquake, and that's because most of you were working for a period of time from the moment the earthquake happened until we finally got a little down time over the weekend.

And I think that, if I may be so bold as to say, that radio's value was never more evident than during this earthquake. It was clearly the resource for information for hundreds of thousands of people who did not have power. And I think only now are we really beginning to realize and really appreciate the responsibility that we did have and do continually have, not only KGO, but other broadcasters as well, radio broadcasters, in making sure that we get out the important and pertinent information to the public.

As many of you know, trying to turn on a television set during this period of time was to no — Gretchen's just arrived — did not have a whole lot of success as a result. , obviously, based on the —this is how our newsroom has been looking for the last couple of days — newspapers, obviously, for various reasons — they work on deadlines

— they were not able to get their information out as — out as quickly. And again, it came down to radio to be the primary source of information.

KGO, in particular, suffered a great deal of damage. As you may or may not be aware, we were off the air shortly after the earthquake, for approximately 38 minutes. Our three towers suffered extensive damage. Our towers are located — our transmitter site is right — just off the San Mateo Bridge, and one tower is down. The other tower, the second tower, lost about 300 feet. And the third tower is now leaning at about this degree (gesturing), and we're basically off the air. At least with the power that we have, we're off the air if we have another aftershock, a major aftershock.

We have already developed a scenario by which, if that tower goes down, we will be able to operate to serve the community at about 5,000 watts. But given that we're a 50,000-watt clear-channel radio station that is heard as well in Vancouver and Mexico City as it's heard in San Jose and Marin, especially at night, it's very important that we get our power and get our — get our towers constructed.

We estimate that we will be back to full power in about six weeks from now.

As I said, we were off the air for about 40 minutes. But we — once we did go on the air, we threw every bit of resource that we had available to us. We do have a policy of making sure that helicopters and airplanes flying traffic reports are always fully fueled. Some outlets fly, basically, with only the amount of fuel that they believe is necessary to get them through a particular shift. I'm glad we were flying with full fuel, because, otherwise, our pilots and reporters would have had to have landed to refuel. And during the initial time in which the earthquake was happening, we were — we were able to provide an overview, through the plane and the helicopter, that we just couldn't get any other way.

Between the news staff and the talk show staff — I'm sure most of you are familiar with KGO — it is a news-talk radio station. Seven hours of our day is devoted primarily to news. The rest of the time is devoted to talk shows. Everybody came to work together. It was — the talk show hosts became reporters, the news people became news people, talk show, whatever. Whatever we had to do to make sure that we were on the air continuously with the information, we did.

In fact, we stayed on the air for 72 hours without breaking for any commercials or network programming. We stayed straight through with the — with the earthquake. I was sort of amused to hear one outlet today advertising the fact that they stayed with it for 19 hours and how complete their coverage was. No question about it, but, you know, when it really comes down to — comes down to it, if you are an operation that stays with it for 72 hours, without any other form of programming, you're doing what you need to do.

We had about 35 people on the air. We also utilized the entire sales staff, the accounting and other employees as well, to man our telephones in the newsroom.

I think we functioned extremely well during the —during the earthquake. The egos were checked at the door. I deal with a lot of egos every day, and tolerance for that in this instance was next to nil. And the one — the one time that somebody was about to, basically, pop me for being assigned to a particular story that they're not normally assigned to, is, I'm sure, the last time that that person will ever choose, in this kind of situation, to make their assignment needs known to us, given the emergency.

But I'm glad, for the most part, we really — we really did well. If I could do something differently — I was at Candlestick — I was lucky enough to get a motorcycle ride back, which made it very easy, because we could get through traffic quickly. If we did something else differently, I would have stayed on the air, despite — I would have been broadcasting from our studios despite the fact our signal was not getting out for that 40 minutes, primarily because the ABC radio network picked up our programming, and we were broadcasting to about 1,000 radio stations around the country and around the world. And if for nothing — even though we weren't getting — locally, getting our information out locally, at least we would have been able to get it out in that initial few minutes around the country.

I think the biggest reason I feel that we did a good job is because we remained calm. We were a voice of reason. We never once went with the death toll of 250, 260. We —

and as has been reported — I see the reprint of one of the papers today of October 17th, of their issue, headline "Hundreds Dead." Well, frankly, I'm glad we didn't fall into that trap.

We — one body, one casualty, is certainly one too many, but given that we were able, from the various command posts, to find out what the casualty list was, if you will, we used our own count. And we were accurate. And if we did anything, then I'm glad that that was the one thing that we were able to be accurate about, because I think, obviously, inflated figures tend to panic people.

We learned that our emergency generators must always be maintained, and I'm glad we do that. We spend a lot of time and a lot of expense to ensure that our generators are up and operating. In fact, I might even recommend that any radio station, any licensee choosing to do business in the Bay Area, be required to have a back-up generator that could at least get their signal out, as far as the Bay Area is concerned. Several do not, clearly do not.

We learned that we must be — we must continue to be reliant on two-way communication, as opposed to cellular — as opposed to cellular telephones. Cellular telephones, during the initial period, were worthless. We could not get any communication out by a cellular telephone.

We also learned that we need, even though we have a good number of on-air telephones, we need more, personally, than — we need more at the station than we do have. We actually only have three, right in the newsroom. But we have seven on-air telephone lines totally. We're going to expand that in the newsroom.

What worked? The cooperation between local police and fire departments was tremendous. There was one point where a — I don't know who it was, but somebody from the San Francisco Fire Department commandeered our frequency and said, "Hello, KGO. This is the fire department. Sorry to interrupt, but this is a call for all firemen, all fire people, to return to their stations." No problem. In fact, while we don't want everybody breaking in our frequency, given the nature of this — of what happened here, we didn't have a problem with that — local police as well.

Bay Area hospitals, we found that they were easily — they were able to get to us quickly, so — as we could put out the information for their pleas for medical personnel, the doctors, the nurses, the technicians, anybody, to return to the emergency rooms. It was a very, very effective way to get communication out.

We had extremely good cooperation from PG&E, Pac Bell, and BART. PG&E has an extensive system of PR people who were able to field our calls. They were able to get our information — get information to us, which was very important. The same for Pac Bell and BART. Again, all three, I think, did a tremendous job.

I have hesitated to put CalTrans on that list, not because they didn't do a terrific job, but they, in many ways, had a much more difficult job because they had a wider area in which to try and get accurate information. I think that it was evident that, again, that's where radio plays a big part. Not only did we utilize however many people we were able to get on the air, but given a situation like this, radio often — especially KGO — becomes a primary source of information.

If we have callers calling the radio station from throughout the Bay Area being able to describe the degree, the intensity, the damage in their particular areas, officials like yourselves are listening to the radio station and can, in fact, decide where people need to be, where emergency services need to be as well. We've taken a lot of flak for the fact that — for the fact that we opened up our telephone lines during an emergency situation like an earthquake. But given that we now have 13 telephone lines which are being tied up for people to get on the air to pass along their information, I stand by that policy, and I think it's something that — that you will see that we continue to do.

The emergency broadcasting system: what is it? I have no idea. I am now told that it was kicked in, that it was activated. But I don't know that officially. I only know that from the program director talking yesterday, that, in fact, it was kicked in. If it was, I have to tell you, had we been notified, we probably would have chosen not to — not to take it, because we clearly knew that, given our staff and resources, that we were providing a hell of a lot more information than can be heard anywhere else, and for that reason and the fact that though the earthquake was a 7.1, it did not do the kind of destruction that may have been necessary to activate EBS.

There didn't seem to be any central command center where information was available on a statewide or Bay Area basis. I know there's been a lot of talk about what to do with the Presidio. I think we may have developed a perfect scenario for its future. It would be — assuming damage was not done here, it might be a heck of a place to provide central emergency information for the entire Bay Area.

With the governor out of the country, the lieutenant governor was in charge. We had a difficult time trying to contact him. We need emergency contacts for the governor's office and lieutenant governor, and I think that any state or local official, certainly the mayor, when they go out of town, we — the media needs to have a better sense of who we're going to call, when we're going to get to them, and how we're going to get that particular information.

The Alameda County Office of Emergency Services seems to be the one that I can — that I have — during the whole casualty count period, I was trying to find out the source of the information. That seemed to be the source of the 250, however many, dead at the time.

I think that it is clear that all — all state officials and the media should work together in coming up with some sort of plan in a future emergency situation, that officials know that if they don't know it, don't say it; if they do know it, say it. Don't withhold information, but if they don't have the information, don't guess either. We had this situation where people continued to guess about how many people could be under the Cypress bridge overpass.

I know I've gone on a little longer than I expected to.

Gretchen Wells was — who's sitting next to me — was on her way to the station, coming in about five o'clock, I think, on Tuesday night. She was reporting to work and had the good sense to get home, because, as some of you may have heard her broadcast — and I had the opportunity to see her house last night — Gretchen is in a unique situation, where not only did she suffer a great deal of personal property damage, but I have to tell you, and publicly, how much we appreciate the fact that you continued to come to work. I know your husband's about to kill you, but — but we all appreciate it.

Thank you.

CHAIRMAN CLUFF: Thank you very much.

Yes, Gretchen. Go ahead.

MS. WELLS: Hi. Hello, everybody. I don't have any really formal presentation. I was just asked to come and give my little slice of what had happened.

I was on my way to KGO. As a matter of fact, I was outside the KGO building ready to report for duty. I was anticipating anchoring the update that evening. And my car started to shake substantially, and the whole area started to shake substantially. I'm a mother of a new baby — relatively new — he's a year old now — and my first impulse was to go to my child. However, I did run up to the second floor of the KGO building, and I saw that there was damage. It wasn't substantial, but it was enough to prompt me to get home to the Marina.

As I was going home to the Marina, there seemed to be no — cars were not driving any longer. There just was no traffic, and I was able to speed through the downtown area, very frightened for my family, but not knowing how bad it was going to be when I reached the Marina, because the damage downtown, obviously, wasn't anywhere near it. Any one of you who have seen the damage in the Marina, it's rather considerable.

And I remember getting to Bay and Fillmore and Cervantes, which is where the building came down and three died, a baby and a couple. And there was a terrible gas leak, and I looked up ahead, and there was this building down. And it was just unbelievable, because I hadn't seen any damage up until that point. And that's really kind of where the Marina begins. And I knew that I was in trouble. I knew my family was in trouble, and I made my way very quickly in my vehicle toward my home, seeing these buildings just mushroomed all around me. And it was just an incredible experience.

I — I cover a lot of disaster in my work, certainly not on a personal level, but I'm a hardened newswoman, and it was just extraordinary, what I was seeing. Of course, the more I was seeing as I made my way quickly along, the more fear was developing within me.

And I reached the corner of Beach and Broderick, or Divisadero between Broderick — and that, of course, is where I live, and that is where the terrible destruction is, and that is where the fire began. And the fire is what I'd like to talk about ultimately, but let me just kind of — I made some notes around the — just the indescribable shock of being a victim, of being there in your neighborhood and seeing this just colossal chaos around you, the helplessness, the disbelief, the people standing around, just not able to move, buildings down everywhere, the gas leaks. Of course, that was just — just such a terrible, terrible situation.

I recall trying to make my way through the Cervantes area, and there were volunteers already taking charge. There were just one or two police officers. And, of course, they had their work cut out for them, so they — the volunteer people who came to the aid of the various authorities were just extraordinary.

But the smell of gas — I've covered a lot of gas leaks, and this was just a very large gas leak, and the danger, of course, was very evident to everybody. But no one could really respond. And I want to talk about the response and the plans.

There was a sense that the casualty count had to be extraordinary, because of these buildings that were down and because of the fires that were beginning. For about an hour, there was no sense of authority. There was no help. Nobody was coming to rescue us. I guess that's kind of what we as citizens anticipate, that someone's going to come and help and rescue.

I did make my way, finally, home. I remember I had to go around one person who was lying there, a man, and then there was an older woman who I had to make my way around. She was lying, and someone — there were volunteers — apparently, these people had just been pulled out of buildings. So, I did finally reach my family. They were out on the street. We were reunited.

I want to talk about the fire, and that's what I'm here to kind of cover. The fire at Divisadero and Beach, I am told, began from a stove that was left on. When the building collapsed, the stove ignited the fire. But it began as a small smolder. It did not erupt into — and I don't know who the fire people here are — but there was a long, long period of time before any help arrived. And as we were pulling people out, and as I was comforting my child and comforting people and just trying to get a sense of some kind of — just something there on that street corner, the fire began to build. And the flames began to get larger and larger. And I just kind of anticipated that some kind of help would arrive.

And I would say that it must have been 25 minutes to probably a half-hour before we heard a siren, a siren that was immediate. We could hear sirens all over the city, but in terms of our little corner where the fire was building — and along came a Presidio fire truck. I don't know whether anyone's aware of that. It was the yellow Presidio fire truck. It was a single engine. And they began to pour water onto the blaze. And that's when I began with my reports, I believe.

Meanwhile, the fire was growing and growing, and we just kept anticipating that more help would arrive. "Where is the San Francisco Fire Department?" And nothing did happen for a very, very long time. And I — I'm sure that that's all documented somewhere. And I haven't had time to look into this because I've been so busy with my family and working for — with KGO. I would like to find out some answers to these questions. Why did it take so long for the response to come?

I appreciate that there were reports of blazes throughout the city, but when we look back, there really wasn't any other large fire. So, this was indeed the area that we need — where we needed help badly.

Finally, San Francisco Fire did respond, and there were several trucks, large hooks-and-ladder, et cetera. And this is where we need to find out — this is — this is why I'm here, and that is that we had a terrible problem with water. The water came, and the water went, and finally there was no water at all. And that's, of course, when the fire truck — the fire boat Phoenix was brought in, and we got some hoses from the bay and we got some hoses from the Palace of Fine Arts — they actually were sucking the water out of there.

And, you know, I'm recalling for the first time, so forgive me if I'm a little bit hesitant — but just the sense that the flames were fully — there was a large, four-unit building fully engulfed in flames, and the flames were spreading up the block. And there was no water. And I want to know why there was no water. I think that might be something that we could look into. As my husband and so many of my friends are saying, we — we've been on the moon, we've been to the outer spaces of the — out to outer space, to the far reaches, we've done so many wonderful things, and yet we couldn't get water onto this blaze. And that's really what I would like to know. I'd like some answers to that dilemma and problem.

And if anyone's got questions for me —

CHAIRMAN CLUFF: I have some questions for either of you — well, both of you, actually.

I want to take this opportunity to acknowledge and compliment the local radio stations and other news media that, I think, did just an overwhelmingly responsible job. I used the radio to learn, as a scientist, what was happening in the earthquake. I always do this. I find that that's a very reliable source of figuring out what's happened and what actions I might have to take with the Seismic Safety Commission or at my position at PG&E.

I wanted to ask John, or share a concern, and that was, while the local radio and television people were doing a fantastic job, accurately responding and recording, the national news media seemed to be playing a different show. And I remember, within a day, I was over inspecting the Cypress collapse, and here were all of these stages set on top of trucks and vans so that the national news personalities could get full exposure.

And the impression they left — and this was confirmed by telephone calls that I received from friends and relatives throughout the United States — that the Bay Area was completely devastated. No way, until we saw the photos from the blimp on the resumption of the series games, did I ever see on television a view of the Bay Area and San Francisco unscathed. And that really leaves a false impression. What can we do to improve that?

MR. McCONNELL: Well, there's no question, if you're a photographer, and you go to take — you're going to a park, you're not necessarily going to take pictures of the sky. You're going to take pictures of the tree, or the trees. You're going to take pictures of what is most obvious. That is why the pictures of the Cypress structure, of the cantilever, the Bay Bridge, the Marina, the fire in the Marina. I've got to tell you, though, I am — I am not particularly pleased as to the coverage from the — from the national media.

CHAIRMAN CLUFF: Yeah.

MR. McCONNELL: And having, for most of my career, worked for the networks, I, on the other hand, understand the need to get in, to do the story, do the story as quickly as possible, and try and create a general overview. From all the reports that I had gotten, from New York and Washington, San Francisco had fallen into the Bay.

I am not here to defend, nor, to a large degree, criticize what the national media does. I can only — I can only respond that they did not make a lot of friends in San Francisco or the Bay Area as a result of coverage and use of facilities. We've sure read enough about how many of the network personnel were able to get around from Point A to Point B. It did — it did create a bit of a negative, in our minds.

But I think, as a point I made earlier, it really has to come down to a general area, or just one specific focal point of command. San Francisco, Oakland, San Leandro, San Jose, everybody has its own particular area, its own particular information to report. But, you know, in an earthquake, in a natural disaster, we're all one. And however difficult it might be to establish, if there could be a way in which we're able to develop a central basis or base for information, I think that would go a long way in disseminating information that is accurate.

But, again, I'm not going to come in from New York or L.A. or anywhere else and take pictures of Golden Gate Park; I'm going to take pictures of the Marina. And that's, unfortunately, the nature of the business.

CHAIRMAN CLUFF: But it — I mean, I experienced the same thing. I was in Mexico City when the earthquake struck there, and I was watching on cable TV in my hotel room what you people were seeing. And everyone was led to believe that Mexico City was totally destroyed, but only one-tenth of one percent — and it's — all they had to do was just make that statement, that Mexico City —

MR. McCONNELL: Yes.

CHAIRMAN CLUFF: — San Francisco, by and large, is okay.

It seems to me that if one went through some scenarios like we heard the airport and a lot of other businesses have done and will tell us, that the news media, the national news media — I'm not criticizing the local ones — but the national ones could at least, as part of their story, say — tell it accurately, on what's happened. It would seem that that should be a simple thing to do.

Commissioner Iwan?

COMMISSINER IWAN: I have a number of questions about the news media, but I can't resist asking Gretchen a question about her personal experience.

As a resident of the Marina area, did anyone ever tell you or intimate to you in any way at all that you were living in an area that was possibly unsafe or hazardous for earthquakes? Because, as an engineer, as I looked at that area afterwards, it was rather obvious to me that those kinds of structures would not work well in an earthquake. I'm just wondering, as a — as a — I don't know if you own there or lease or what, but as a resident, were you ever warned?

MS. WELLS: We were certainly warned, and I was certainly aware that we were on fill. What does that mean to someone who's never experienced a 7.1 shaker? What does that mean to someone who's been living in the city for a long time and has — has experienced small earthquakes? An earthquake was an earthquake before. Now an earthquake is something very different.

Just to let you all know my heartbreaking little story, my husband and I had been looking for a place to buy for a couple of years now. We'd been looking throughout the city very actively. Two months ago, we found our home in the Marina and we purchased it. And it was our lovely dream house. And, of course, there's substantial damage now.

I wanted to add one little thing. The first sense that there was any authority on that terrible night when the sky was burning and the Marina was in chaos was when the MP's finally arrived from the Presidio, because there just were no police officers around. There couldn't be. They were stretched so thin. There was maybe one for every five blocks, or two.

But the first time we had a sense that at last someone was going to come and help us, someone could give orders, someone could issue some kind of an — some kind of authority, was when the MP's arrived. And we were very grateful of that.

COMMISSIONER IWAN: If I could ask one quick question of John, as I watched the news from Los Angeles, since I wasn't here, I sensed that there seemed to be some problems in getting knowledgeable people, experts, if you will, to talk to, by all the different news agencies around. And I wonder, is that a problem?

Is there a need to help the news media develop lists of people that they can call in the event of an earthquake that can give them accurate background information, seismic safety information? Or do you feel that that's something that you've done anyway and it's taken care of?

MR. McCONNELL: You know, given the fact that we are in information-based radio station, we obviously have the resources and the people, and found that, very quickly, we were able to get experts on the air to tell us what we needed to know.

I think, in general terms, that all broadcast outlets in the Bay Area, and all of California, for that matter, need to have a better understanding of emergency operations, or operations during an emergency. And I don't think that that — I think it would be very much appreciated if, however it is sort of culled together or put together, that if we have phone numbers of experts, that would be something we'd all aprpeciate.

CHAIRMAN CLUFF: Gretchen, I'd like to follow up on an issue that was raised and discussed slightly before you came that applies particularly to the Marina area. And that is the decision process for you and other owners to gain access to your property. Is that an issue that we need to deal with? And what are your recommendations that we do about that?

MS. WELLS: That's a very difficult one. We had building inspectors, apparently, flying in from all over the state. So — and, you know, their fields of expertise were in different areas. And people were making these very important decisions for the people of the Marina. There was question about whether these people, some of them, were — their credentials. Some of them were better credentialed than others. There was a lot of confusion. There was chaos.

And in so many instances, it was just a single person, perhaps with an assistant, going for just a couple of minutes — going into a building and determining whether it was habitable and making these determinations and decisions for these families who were just so affected, so impacted, of course — you know, the red, the yellow, or the green.

I went — my building was determined to be yellow, and then, later, we had some Bechtel people come through, and it was determined that the building was, in fact, green — tentatively green — it is green now.

Yeah, there definitely needs to be some kind of a system. And I appreciate, certainly, that nothing like this had ever happened before, where we have to establish hundreds and hundreds of situations, whether these buildings are livable or not. And certainly, that's — that needs work.

CHAIRMAN CLUFF: Yeah. I don't want to be critical of the local officials. They were confused. We were all confused.

MS. WELLS: They did their best.

CHAIRMAN CLUFF: And they did.

MS. WELLS: Right.

CHAIRMAN CLUFF: But, nevertheless, we need to learn — and I personally went down to the Marina the next day, and flew over it in a helicopter and then went down, and then visited it again a few days later. And, with my experience in looking at a lot of earthquakes, it seemed to me that the decision process could be improved, because if I owned my house in the Marina — I live up near Twin Peaks —but had I been down in the Marina District, I would have been willing to take full responsibility to go in and retrieve whatever personal belongings I wanted.

And it seems to me that most of the buildings down there, with a few — it's a reasonable risk to take, to let the people go in for several days, before these big monsters came in and crushed the building. That was sad, to stand there and watch that.

MS. WELLS: It was sad. And the worst part of it was that the yellows and the reds were given a 15-minute window —

CHAIRMAN CLUFF: Yes.

MS. WELLS: — which I never really understood. And I think that created a lot of hysteria, because the 15-minute window which was given the next day to many of these places, in ensuing days, became void. And to this day, the people who only had 15 minutes to go on are still going in on a — I just left my streetcorner, and there are people still going in, with no supervision. So, it was a little bit of a circus.

CHAIRMAN CLUFF: Yes.

MS. WELLS: And there was — there really does need to be a system worked out, certainly.

CHAIRMAN CLUFF: Well, it seems we as a Commission need to focus on that issue.

And, Dan, maybe you have some observations. That's an area of your expertise.

COMMISSIONER EBERLE: Well, I was going to go back to actually during the earthquake, not so much afterwards, which is certainly a major problem, in the buildings and everything.

But, John, you mentioned a couple of times that there didn't seem to be a single point of contact or information. What kind of an impression did that leave you with? Did you feel that the city and the county and the state were talking together and coordinating? And how did that — what impression did that leave you with?

MR. McCONNELL: Yeah. I think that the first thing that people do — the first thing that we in the media do — in fact, it was clear in listening back to our transmissions, that when all the reporters checked in for —to tell us what was going on, everybody was dispatched, depending upon where they were, to either a local hospital or the county emergency services.

The first thing that people tend to need to know is where's the mayor, after quickly where it is — you know, what the situation is with their families. But we want to know where our leaders are. That's number one.

It is very difficult — and I don't have the easy answer for it — but given we have Alameda Emergency Services, you have San Francisco, you have the South Bay area, you have Marin, we're fortunate. We had the people in that could make those telephone calls, and we were able to get through. But for those that didn't have the benefit of having a lot of people still at work — heck, it happened after five o'clock — a lot of people had already gone home to — not the least of which is to avoid the traffic, if they lived on the Peninsula — you just had to make a lot of calls.

And if you couldn't get through, you were stuck. Might it be that there is another system by which a data transmitter that the local wire services are able to pick up — we lost our wire services. That's my point. We didn't get the benefit of anything that was going on, AP, UPI, or Bay City News. Maybe we need to develop an emergency system by which they are able to broadcast to us and other radio stations.

But, specifically, it's just a question of making so many different telephone calls. You've got to call the fire department in San Francisco, then you've got to call the police department, then you've got to call the local hospitals. I don't know. Is that the role for the command center, to take that information? It would be helpful. I don't know if it's their role or not, though.

CHAIRMAN CLUFF: We need to move on.

Commissioner Kockelman, one last question.

COMMISSIONER KOCKELMAN: One quick question.

I understand your photographing the trees, and TV does that and radio. Was there any TV or radio people that reported on the other ninety communities in the Bay Area, where I happen to have six family members, and saying, "No problem"? Did anybody do that?

MR. McCONNELL: I can tell you that we did that.

COMMISSIONER KOCKELMAN: Okay.

MR. McCONNELL: And I can also tell you that I haven't watched a whole lot of TV. I haven't — I haven't seen those spectacular pictures from the blimp. I haven't seen any of that yet.

COMMISSIONER KOCKELMAN: Well —

MR. McCONNELL: And my point being that, again, given if we have listeners and reporters rolling continually on the air, telling us, "It's fine down this particular street, I don't see any problems here, I don't see any problems there," that is our role. That is what we do, as a local outlet. And that is as important as reporting the fire in the Marina.

COMMISSIONER KOCKELMAN: Chairman Cluff's point is really very important, you know. We're getting the national thing that Northern California is a disaster area. They're focusing on five communities. I'm out of state. I spend twelve hours jamming those lines up trying to get back in, for both professional and personal reasons. That's crazy.

MR. McCONNELL: Yeah.

COMMISSIONER KOCKELMAN: Once I got in, I knew that, you know, we hadn't lost the Bay Area. But twelve hours on the — on a telephone is a long time.

CHAIRMAN CLUFF: Randy, did you have — or — yeah, excuse me.

Randy. Over here.

COMMISSIONER PESTOR: Well, maybe — just going back to our hearing of two years ago, after the Whittier Narrows earthquake, I thought at that hearing, there was — some people were saying there was the problem with communications on the two-way systems, and that the only way they could really do a good job of communicating was through cellular telephones. That's what we heard two years ago.

This year, we're hearing the cellular system broke down. Have we gotten any information on why that happened?

EXECUTIVE DIRECTOR TOBIN: No. I think we can look into that. The Whittier earthquake was such a small earthquake that — and cellular, there was — two years ago, probably had a quarter of the patronage it has now.

On the other hand, I had calls come into my cellular within a half-hour after the earthquake.

MS. WELLS: See, I made my reports with my cellular phone from the corner.

COMMISSIONER PESTOR: Yeah.

MS. WELLS: I don't know that the cellular system broke down.

EXECUTIVE DIRECTOR TOBIN: It was overloaded.

MS. WELLS: I just think that there was such an incredible amount of calls going out that it wasn't — you weren't able to get through. But I never heard there was a breakdown of the cellular system.

COMMISSIONER PESTOR: Well, no. You — I thought that you had mentioned that there was —

MR. McCONNELL: I made — I made the point that cellular communication, initially after the quake, was next to nothing.

EXECUTIVE DIRECTOR TOBIN: It was overloaded.

MR. McCONNELL: There was not a cell phone that I could find — and I went through a lot — in the Candlestick area that was able to get out. None of our reporters were able to communicate with the station on a cellular telephone.

COMMISSIONER PESTOR: And when it was blocked out, when the system was blocked out on the 415 area code, 916, and

408, after the earthquake, that would have affected the cellular telephones as well, right?

MR. McCONNELL: Well, it was.

COMMISSIONER PESTOR: Yeah.

MR. McCONNELL: I do know that they were able to communicate outside. There were some instances of calls going straight into New York with no problem, but not within the Bay Area.

Again, I can only relate our personal experience.

COMMISSIONER PESTOR: Okay. Thank you.

CHAIRMAN CLUFF: Go ahead, Tom.

EXECUTIVE DIRECTOR TOBIN: I heard a replay of the tape of the time when you were off the air —

MR. McCONNELL: Yeah.

EXECUTIVE DIRECTOR TOBIN: — when you were just discovering what had happened.

MR. McCONNELL: I actually brought that today. I don't know —

EXECUTIVE DIRECTOR TOBIN: It's a wonderful tape that — I would love for us to hear it. I don't — I know we're running out of time.

CHAIRMAN CLUFF: How long is it?

MR. McCONNELL: Three minutes. Not quite three minutes.

CHAIRMAN CLUFF: Let's play it. Yeah, we can squeeze three minutes in.

MR. McCONNELL: This is — again, we were off the air for approximately 40 minutes, and this is — I'm going to let it — you'll hear it yourselves — essentially, this is how we reacted in the first five minutes after the quake hit.

(An audio tape of KGO's transmissions was played.)

CHAIRMAN CLUFF: Thank you very much.

We need to move on.

Thank you for sharing your experiences with us, and thank you again.

MS. WELLS: Thank you.

CHAIRMAN CLUFF: The next item on the agenda is Jerry Milano, of the Banking Clearing House Association.

Jerry, you're here.

Again, let me just repeat, since people are coming in. We're interested in a very brief comment on your experience and your responsibility, and what worked, what didn't work, and what you learned that we ought to know about at the Seismic Safety Commission.

MR. MILANO: Sure. I have a prepared statement that I'll leave with one of your clerical personnel.

Let me tell you, my name is Jerry Milano. I'm the executive director of the California Bankers Clearing House Association. The Bankers Clearing House Association is a trade association for eight of the largest banks in the State of California. You would recognize all of their names, and they're in the prepared testimony.

We've been in business since — in the City of San Francisco, since 1876, except for a brief interruption in the spring of 1906. We were also briefly interrupted this year, for a shorter period of time.

We have, for some years, worked with the California Office of Emergency Services to provide an appropriate role for banking following major disasters such as a major earthquake, prepared to visit with you.

The essence of banking's role in an earthquake type emergency is to stay the heck out of the way while health and safety measures are restored, and then to assist in the economic recovery of the state following such a disaster. I can report to you that we stayed the heck out of the way while the emergency recovery — while the emergency services personnel attempted rescue and fire type measures, and we restored banking services rather quickly.

Our plan works reasonably well. We — essentially, the major banks in California, in cooperation with the Federal Reserve Bank system, have a plan that says they will attempt to operate in their operating centers in the two major areas if they can. If they are unable to operate, they will relocate their operations to the alternate end of the state, and the assumption, if you will, on banking services is that we don't lose both San Francisco and Los Angeles in a single earthquake.

Three of our member banks were damaged in the Bay Area to such an extent that they found it necessary to relocate to their operating centers in Southern California. Two other institutions continued operating on emergency power, although they did divert some of their workload to Southern California for a brief period of time.

We were able, through our own emergency radio network that we operate statewide on behalf of our members, to collect damage reports shortly after the quake occurred, to report status of our members to the — to the other members so that we could devise cooperative measures to assist each other, and to quickly devise an emergency plan for the next day so that we were able to settle the balances between the institutions at 2:00 p.m. Our normal settlement time would be — would be noon.

So, counting ourselves among the extremely fortunate, our services were delayed two hours for our member banks on the 18th of October. From the 19th through noon on Monday, the 23rd, we went to an abbreviated emergency schedule of exchanges between banks. We did that until noon on Monday, had a conference call on Monday with our member banks, and they asked us to restore normal service schedules. At that time, they found the — while the emergency measures had helped during temporary traffic disruptions, they wanted to go back to a regular schedule because the workloads were being disrupted by the work.

There isn't anything particularly elegant in what we do. We are a clearing house organization. What that says is that the messengers from the member banks deliver bales of checks to each other in our facilities. We account for the bales of checks, and we have power of attorney authority on the banks' reserve accounts at the Federal Reserve. When we have accounted for the bales of checks that have been swapped off the back ends of pickup trucks and vans, we charge each bank for the amount of checks delivered to it, and credit each bank for the amount of checks it delivered to the other participants. We've been doing that since the 4th of February, 1876, with modest disruptions in '06 and this year.

I'd be happy to answer any questions you might have about emergency operations.

CHAIRMAN CLUFF: Let me start off. I'm sure other commissioners will have questions.

What would be the impact of a significant delay? You mentioned two hours, and I realize that doesn't come close, but what — could you describe to us —

MR. MILANO: Sure.

CHAIRMAN CLUFF: — how — what is the length, and what would happen if it were, say, two days, three days, or a week?

MR. MILANO: Yeah. Our — well, by contrast, in 1906, we were out of business for — flat out of business for about a month. We had to set up a single bank with the Treasury — I'm sorry — the mint — the director of the mint actually exceeded his authority in '06 to permit us to set up one bank on the — on the location of the mint. That one bank discounted all of the loans for all of the banks in the city, from about a month after the quake until August, when we were back in operation.

When we looked at that activity, we went, in 1906, from $44 million a week in activity to zero, and stayed at zero for a month. So, there were no exchanges of value among San Francisco banks for a month following the '06 quake.

The exchanges of value today, statewide among our members, approximate $4 billion a day. That's roughly 80 percent of the economic activity in the State of California, supermarket checks, payrolls, about $4 billion a day in California. We also collect $1 billion a day out of state.

We operate airplanes, jet courier runs, from Oakland to Burbank Airports, that collect another $1 billion a day on out-of-state banks. We operate shuttle aircraft for our members between Los Angeles and San Francisco that collects another $2 billion a day on all the banks that are not members of our association, essentially utilizing the services of the Federal Reserve.

Our airport facilities were not disrupted. North Field, at Oakland, continued to operate, and our flights east went out. Our flights back and forth to collect the checks in California continued to operate between Burbank and North Field in Oakland, all night long. We were able to schedule extra flights as our part of our emergency plan to assist the banks to relocate to Southern California if the north is disrupted. We were able to schedule extra flights through our carrier to transport collection documents from the Northern California banks that were hurt to the Southern California processing centers to operate.

That's what our plan says we should do when we're disrupted. That's what we did.

We're looking at roughly $4 billion a day in California. Another $2 billion on nonmembers would be $6 billion, another $1 billion a day out of state — I guess there would be another $3 billion that we can't get out in one day and has to lapse over to the next, so, gees — I never thought about that — 4 and 2 is 6, and another 4 — maybe

$10 billion a day collected from member banks.

CHAIRMAN CLUFF: And so, what is the impact? I mean, what is the —

MR. MILANO: Well, you're looking at a 9 percent fed funds rate on — gees, on a million, would be about $200, so on a billion, you're — gee — I have people who do the arithmetic, and they have computers.

CHAIRMAN CLUFF: Sure.

MR. MILANO: Anyway, it's about $200 per million per day. And, gosh, you folks can do the arithmetic. For as much as you can't collect, that's what it's worth in economic terms.

In real terms, you're talking about very different kinds of circumstances. Will the local supermarket accept a citizen's check to pay for groceries, to buy drinking water when the sewers are backing up because of the earthquake? In real terms, you're talking about a whole lot more. What we're talking about is maintaining the confidence in the stability of the banking system, okay, so that you can use your ATM card at the supermarket, so that you can write a check and get groceries when your family is disrupted by an earthquake. Those kinds of things are our concern, whether — the economic loss to the banks is trivial compared to the real terms of economic worth in the community.

A check has to be worth something. The reason it's worth something is Safeway gets their money real quick. If they can't get their money real quick, they stop taking rectangular pieces of scrap paper for money. It's about as simple as that. It's our job, and has been for more than a hundred years, to make sure we collect them very fast.

CHAIRMAN CLUFF: Commissioner McCarthy, do you have a question?

COMMISSIONER McCARTHY: Is it imperative that you be located in San Francisco? And is there any particular reason that you're in this isolated peninsula?

MR. MILANO: Well, gee. We have — we like it here. This is —

COMMISSIONER McCARTHY: So, that's an acceptable level of risk for you.

MR. MILANO: We're located in a brand new building on Market Street, recently moved there. We speak well for brand new buildings. As a matter of fact, in retrospect, my conversation with my operations manager is, "Why did he leave?" But he went down the street, conducted tests on the radio net to get it out — we had a new employee in the office, and wanted to get her safely out of the building — had to walk down about twelve stories. But I can report to you that the elevators stopped working as soon as they cut the power.

We were very fortunate. We didn't lose a computer off a desk top. We didn't lose — I lost the top to a crystal cigarette box in my office. I stopped smoking in January this year, so it's easier to use it as a candy dish, now that the top is broken off, than it was before. And that's about the extent of our lasting damage to our offices.

We have very serious bankers who know the history of California and the emergence of Bank of America following the '06 quake, et cetera. So, they pay serious and careful attention to plans to recover their businesses and to loan to the good citizens of California following natural disasters. And we have plans in place to make sure we can start doing that very quickly thereafter. The plans look to be pretty decent. We pay a lot of attention to it.

We have an emergency preparedness group that meets every month to make sure the plans are functional. We tested the plans — I hope this isn't offensive to you — we tested the plans when the Holy Father visited a couple of years ago. We decided that was as good a way as any to test a natural disaster, so when the Holy Father visited San Francisco and Los Angeles, we said, "That's just like an earthquake," and we tested the plans while he was visiting.

They seemed to work reasonably well, and we improved the plans. We improved the plans based on what we learned from Mexico City — I noticed you were talking at the meeting before. What we learned from Mexico City is: not everything breaks. You know, there's stuff that breaks, and there's stuff right next to it that doesn't break. And it's even difficult to predict which things are going to fall down and which things are going to stand up.

So, we changed our plan based on the Mexico City quake to say we didn't think we'd all leave town. Our original plan said if San Francisco's broken, we all go to Los Angeles and do our operations. What we realized following Mexico City was, some of the things in San Francisco would probably stay working, and some of them would probably be broken. And some of them would have to relocate, and some of them wouldn't, and that we'd have to be prepared for a damage assessment shortly after the fact, and to invent an operating plan pretty much on the spot, based on what was broken and what wasn't broken.

That's what we did, and it seems like it worked reasonably well.

CHAIRMAN CLUFF: We need to move on. If there are — Commissioner Iwan.

COMMISSIONER IWAN: I have what should be a very quick question.

So much of industry is dependent upon computers nowadays, and I know the banking industry uses them heavily. Are you aware of any damage to computer centers, other than just power outages, that affected the banking industry?

MR. MILANO: Yes.

COMMISSIONER IWAN: And how extensive was that, or what did happen?

MR. MILANO: One of the banks had some damage internal to the center, which caused them to shut the center down, relocate to Southern California, and send engineers back. I don't have detailed information on the nature of the problem, but it was such that they shut the center down, didn't operate, went in with engineers, and replaced component parts that were damaged.

COMMISSIONER IWAN: And it's up now?

MR. MILANO: And it's up now. It took them a day to restore it, so they — their concern was, and all financial systems' concern is, you don't want to operate with an unreliable system. They weren't able to certify that the system would be reliable, so they didn't use it. We had a serviceable plan. They went supp.

COMMISSIONER IWAN: Okay.

MR. MILANO: I can tell you, there are two things that might have worked better for us. Thing one is, it took us about a day to get permission from the Federal Aviation Administration, under Rule 135.19, to extend a pilot's hours beyond the 10 hours they are permitted to do.

Now, you're messing with a guy's life when you do this kind of stuff. I mean, say, the pilot would like to help — he sees the film, he knows people are hurting, and he knows that there's valuable property wasting here. He'd love to help. If he flies beyond what's he allowed FAA, he can lose his license and his livelihood.

It would be real helpful — and we've been dealing with FAA for about four years now trying to get — I guess I should say administrative authorization — I was tempted to use the other word — but administrative authorization to invoke Rule 135 and allow for emergency extended hours. It would be real helpful if FAA knew, in an emergency, who could grant that authority and it didn't take 24 hours asking for it.

CHAIRMAN CLUFF: What was the second lesson?

MR. MILANO: The second thing is, it seems to us that what works really well are things that people are familiar with all the time. And it occurs to us that the Bay Area suffers from a lack of helicopter services. We just don't have them around. And while we can get military stuff, and you can get the air traffic reporters' chopper, we don't use helicopters on a daily basis here for routine services.

The hospitals have to get special permission to take a patient into the City of San Francisco with a helicopter. For many years, we've had influential persons in the City of San Francisco concerned about disrupting the ambience of our wonderful city.

We think we suffer from lack of experience on a day-to-day basis, with routine helicopter use. We suffer from not having the helicopters around in sufficient quantity to do routine business. And it's one thing to call the Presidio and ask for the emergency military helicopters to come in, and the three or four or six or nine of them will arrive. It's another thing to have 25 or 30 of them in constant use every day, have your policemen familiar with services to bring one down in the middle of the street and get somebody out of here, have your fire department familiar with services to bring one down in the middle of a street and help get an injured person out of here. We don't have that in San Francisco. We don't have that in the Bay Area.

And it seems to us, in a major quake as opposed to this one, we will be severely impacted by lack of resources, not just the lack of the helicopters themselves, but the lack of experience in using them in a routine sort of way.

I will tell you that that is self-serving. We would love to use helicopters on a daily basis to collect financial documents. We've had trouble getting permission to do that, for a number of years. It might be disruptive to the ambience of this community to have helicopters flying back and forth carrying checks, carrying sick people, carrying television reporters, carrying conventioneers to convention centers, but there would be more resources and more people to use them, familiar with using them, in the event of an emergency. We think that should be considered.

CHAIRMAN CLUFF: Thank you. We need to move on, Mr. Milano.

MR. MILANO: Yes, sir.

CHAIRMAN CLUFF: Thank you very much for your appearance here and the information you've given us.

MR. MILANO: My pleasure.

CHAIRMAN CLUFF: We're going to switch the agenda a little bit here and have John Marks, who is president of the San Francisco Convention and Visitors Bureau appear before us.

But before he does — go ahead, sit down, John — I mentioned earlier that we had scheduled and had gotten a commitment out of Mayor Agnos to appear here this morning. In checking with his office, he chose not to put this meeting on his agenda, for what reason we don't know, and he sends his regrets.

So, John Marks.

MR. MARKS: Good morning.

That's quite an act to follow.

I can tell you I spoke with the Mayor last Friday, and the Mayor will be traveling with the Convention and Visitors Bureau to Chicago, Washington, and New York, to assure people that we are, in fact, open for business. And maybe that's my line here today.

Let me just say very briefly, because of coming in quickly and being on a rather tight schedule, the quake obviously has had its impact on our tourism industry, not just in San Francisco, but certainly throughout the affected areas of the Bay Area, as well as Northern California.

To put it in perspective, tourism, to San Francisco, is our largest industry. It's a $3.4-billion industry. We have about 125,000 people employed as a result of that industry. From a tax standpoint alone, to the City of San Francisco it's about $160-plus-million a year in taxes. So, as you can see, it's something that gets hit pretty hard, probably the first industry, so to speak, that feels the effect of any type of devastation, and of great concern.

Good news, bad news. The good news is, our hotels in San Francisco, with the exception of two that remain closed at this time, remained open from the moment the quake struck at 5:04 on the 17th, and are up and operating today. For the first 24 or 36 hours, I think, almost all of those hotels were on auxiliary power.

But unlike many institutions in the city, they were able to function because of those capabilities, and they cared for a full house, because San Francisco was running 100 percent occupancy — every hotel room in this city was full when the quake hit — not because of the World Series, by the way, although that was the icing on the cake — not the results of the Series, that is, but the number of people that were here — I have to get my licks in there somehow. But clearly, we had a number of major conventions, the largest of which was the Water Pollution Control Federation, with almost 15,000 people in San Francisco.

So, we were full when it hit. Obviously, guests — some guests spent the night in their rooms. Others spent the night in ballrooms of those hotels. There was auxiliary power. There was no gas, obviously. Consequently, the guests were cared for with food in a cold fashion in most places, except for a little bit of barbequeing that was probably done somewhere in the back forty.

I will say that our hotels did an admirable job, certainly, taking in not just their guests, but, I think, literally, anyone that walked in off the street. And I say that really uncategorically. Anyone that walked in off the street that wanted a meal, got one. And for the most part, the hotels were unsung heroes, because they gave things away. They — I don't know of many properties that even charged for what they were doing at that point.

The short-term result of the quake on our industry has been one of being very hard-hit. When you have a $3.4-billion industry, and if you divide that by 365, you know what it's worth a day. And your math is probably better than mine, but it's certainly well into the millions.

We had early cancellations of conventions that were here when the quake hit, and that left us pretty empty through that first weekend. We had two major conventions that were to have come in the weekend following the quake.

One was the League of California Cities, which postponed. And, by the way, the good news is they've rescheduled for the 15th through the 17th of this December. Their failure to come to San Francisco had no bearing on the results of the quake, but rather the fact that their members, being elected and public officials from communities throughout our state, really needed to be home, in so many of our communities. And I think we can all understand that.

The other was a group of Nissan Motor Car Company executives and dealers from throughout the country. They were going to be introducing the new Infinity, which you've seen the esoteric advertisements for in all of the magazines. Well, it's going to probably be introduced a different way, because they chose not to come. They really didn't feel that they wanted to hold a celebration in the midst of the devastation that we encountered, nor did they feel their attendance would be what they thought.

Since the quake, our attendance at conventions has really been pretty good, even though a report on KCBS Radio this morning may have led you to believe that life is doom and gloom. In fact, a group of hand surgeons has been meeting at the Fairmont Hotel. They anticipated some 700 people. They have more than 500 in attendance, so they've had a 28- or 29-percent falloff. And two weeks after an earthquake such as we sustained, I don't think that's too bad, quite candidly. I'd be concerned if this were February, but being two weeks after, I'm really not too concerned.

Okay. The Marriage and Family Therapy Association that was in San Francisco last Friday with 4,500 people, they picked up almost every room that we anticipated they would, so they had very little falloff.

We have the Plastic and Reconstructive Surgeons, with almost 6,000 people in San Francisco today, and again, a very slight falloff.

The American Academy of Dermatology is scheduled to come to San Francisco with about 10,000 or 11,000 people the first week in December. And as of this morning, based on 4,000 preregistrations from doctors around the country, they've had 22 cancellations.

So, I guess, from a convention standpoint, I think we're holding our own. And while we have a short-term problem, I think the long term will be relatively well.

The leisure side of the business, or that pleasure traveler, when you and your friends or families go on vacation, that's a bigger concern to us right now, because those decisions are more spontaneous. People decide we're going to go somewhere for a weekend or for a week, whatever it may be. We've seen a real falloff in that portion of our industry, certainly in the short term and, for the most part, through the holiday season. We think it'll be after the first of the year before we see that really come back to life.

The biggest problem we have, I suspect — someone else has said something this morning — while the media has covered this event from head to toe around the country and around the world, the farther you get from San Francisco, the more devastating the quake became. What — the views that were depicted by the media were not inaccurate. They were quite accurate. But they focused on the same scenes time and time again, the Marina, the Bay Bridge, and, of course, the Cypress structure. Those three kept coming up and up. And people really thought we had fallen off the face of the earth.

I mean, I can show you faxes, telexes from people around the world that not only wanted to know if I was okay, but how many relatives did I lose during the disaster. And it was really — they were very compassionate notes, but you can tell, the manner in which they were written suggested that what they interpreted of this event was far greater than what we know it was. And that's not to minimize, obviously, what happened, because it was a devastating event. Yet, 99 percent, I believe — if that's the figure I've heard — of San Francisco's buildings remain untouched by the quake. And, you know, that's a fairly dramatic figure, if that's accurate.

We have been very active since the quake itself. The tourism industry rallied together to make sure that we tried to get our message out to the media to correct the perception that we were closed for business, and to let the people know that we were, in fact, open. We certainly had appearances on everything from the "Today

Show" to "Nightline" to Dan Rather to every newspaper in the country.

We've produced our own video, and had I known you had a machine, I would have bored you for five and a half minutes to let you know that San Francisco is alive and well.

We have a video that we have done which shows the city on October 26th, because we taped it last Thursday. Again, we're showing a clip or two from the event itself, as well as some shots from Candlestick that night of the 17th, when I, along with a lot of other people, were there.

And we are — we've already had this on CNN. We've had it on "USA Today," the television show they're doing. And we're sending this to major clients of San Francisco and the Bay Area that are planning to hold conventions here or move large tour groups.

We have telephoned literally every person that has a piece of business booked in this city. And that's not individuals who were planning to come for a weekend, but any major purchaser of travel, major travel agents, tour operators, certainly major convention buyers. We have contacted them personally. We followed that up in writing with a report on the state of the city, as well as a letter from our Mayor, which is a kind of an open letter of invitation that states the condition of San Francisco.

We have been very active. We look very tired, I'm sure, after these two weeks, as everybody has, because it has been rough. But San Francisco's hospitality industry and convention business really did pull together. We have a short-term problem. It's going to cost us millions of dollars in revenues for this city and for this region. But we will rebound.

Our greatest concern now is that we continue to give too much credence — and maybe this is the wrong place to say this — but as we pick up that newspaper in the morning, or see the evening news, every time someone predicts there's going to be another event, you know, on the 13th of November, or a 50-50 chance between now and Christmas, our business — our business potential drops points each time one of those statements gets the credibility that it's been given nationally.

When I was on the "Today Show" just a week ago, and Bryant Gumble asked me — you know, it's 3:30 or 4:00 in the morning here, and he says, "Would you advise someone to come to San Francisco, given the fact that there is a 50-50 chance?" That's a tough question to answer. You know, I can't advise anybody, nor can you. And the dilemma is, there's a 50-50 chance, I guess, that it won't happen.

But that's our lingering effect, if we continue to — I guess, to give credibility — and maybe it deserves it, but if we continue to give credibility to everyone that's fish rolls over on its side, that that's going to predict —you know, predict a quake, or their dogs are doing something unusual, or the moon's in a certain position, that will scare more customers away from the city. Then not only will we have had a natural disaster, but we will then have an economic disaster on top of that.

I think we can go a long ways to help control the economic disaster by how we — how we position our actions. We can't do much about the natural disaster, to my knowledge.

CHAIRMAN CLUFF: Are you prepared to respond to some questions from the commissioners?

MR. MARKS: Oh, sure. You bet.

CHAIRMAN CLUFF: Fine.

Commissioner Bolt has a question.

COMMISSIONER BOLT: As a seismologist, Mr. Marks, I'm sensitive to the points you make about predictions of future earthquakes. But I think that you're going to have to live with that. I mean, that's part of the science of trying to improve our knowledge of what might happen in the future. And, of course, that could be very helpful if it's able to be put in more practical terms.

I'm sensitive to the dangers of it if it's done loosely and without proper thought as to the consequences. But I'd like to put this to you: given that this kind of statement is going to be made, there's no way that that will be stopped, isn't the proper response for you folks to give emphasis to the — to those structures and hotels and convention centers and so on which are known to be built according to modern earthquake-resistant codes? That is to say, not only is it a fact that earthquakes will come, but it's also a fact that, as you said, a great many of the structures now in this city and other cities will resist earthquakes when they come.

And it seems to me that you ought to give some thought to being positive on that

side, so that when the folks from back East go to stay in Hotel X, or go to such-and-such a place, they will have some assurance that they're coming to structures which will withstand the stronger shaking. I mean, I haven't thought through the details, but I put that to you as a way that we could live with this, and not cause economic problems for the — I just came back from the Society for Risk Analysis, which is a great society to be meeting in San Francisco now — you didn't mention that
— and at the Nikko Hotel, they said that they've got more people there at this meeting than they expected, because — actually, I gave a lecture to a full room of people wanting to know.

And the taxi driver said to me, "Well, the best thing the Commission can do is to announce to the world that it's safe to come back to San Francisco." Well, of course, that's a question of risk. We can't make a simple statement like that.

But I wondered what you thought about the notion of you working more closely with the facts of the structural side, which is — which we know something about.

MR. MARKS: Well, I think, Commissioner — I think, you know, your point's very well taken. It's one that we have obviously used, because shortly after the — after the quake, the world was seeing San Francisco in a shambles.

And in reality, with the exception of two hotels, the San Franciscan and the Presidio TraveLodge, which is a small unit on Lombard Street in the city — and I'm speaking now for San Francisco — I know that at San Francisco International Airport, the Amfac Hotel did suffer some severe damage and, I've even heard, may not — may not reopen — but that's secondhand, and I give it to you in that vein — as well as the Hyatt Regency at San Francisco International Airport is closed for the moment, and I've heard will reopen at some point, possibly in November. But they too have some — some damage.

We have continually let people know that the safest place to be, based on the result, is exactly what you — what you profess. We have done that. The dilemma — the dilemma we find ourselves with is not — is not turning our head on predictions and — again, the more we know, the better off we will be — yet, the — I'm going to use the term the "off-the-wall" predictions — and I think I'll put them in that context — the off-the-wall predictions seem —they seem to be the ones, more so than oftentimes the scientific ones, or the more scientific ones, that seem to get the media attention. And our phone then rings at the Convention and Visitors Bureau saying, "Could you tell us about this fish that rolls on its side, and our concern, did the fish roll this morning?" I'm being — I'm being flip about that, but I — that's what we find our sales staff confronted with, and the hotel sales staffs.

But your point's extremely well taken. San Francisco's hospitality industry is standing, and withstood certainly a 7.1 event, and it would be our hope and anticipation that should we experience something of that nature and/or stronger in the future, that it still would be standing and functioning.

But I'm a marketer. I like the positive too.

And, by the way, just as a sidebar, the Tuesday morning of the 17th, one of our staff members booked the National Funeral Directors Association. How's that for timing?

(Laughter)

CHAIRMAN CLUFF: Commissioner Iwan, did you have a —

COMMISSIONER IWAN: Well, you've sort of answered part of my question. And let me rephrase it a little bit.

I was interested in the hotels that did suffer some damage, and I was aware of some of them that you indicated. Turning around, maybe, what Professor Bolt has been saying, I think that you are in a very critical position also, I believe, to influence the industry with the hotels and the facilities, to make sure that those buildings are safe.

MR. MARKS: Right.

COMMISSIONER IWAN: And one of the things we have learned from this earthquake is that it is possible to design buildings to be safe, and also to rehab buildings that weren't originally safe. And I'm sure you're aware of that too.

And so, you know, we would appreciate your help in getting that — I'm sure you do — get that message across to all the people that are members of your organization, that there may be still some steps that need to be taken. There are some hotels that didn't do so well, and those people need to be encouraged, or others, possibly, that may be affected in a stronger earthquake, to get their act together now and avoid problems in the future.

MR. MARKS: I would suspect — I would suspect that those hotels that sustained no damage and/or, you know, cosmetic type of activity, are probably looking pretty closely right now at that.

The risk — the risk factor to a hotel is very strong, because of the numbers of guests that are in there for reasons other than traditional business purposes, in an office building and whatnot. And I would have to believe that this event would have been even a greater eye-opener than it may — than before, for some. Fortunately, we have many new hotels in San Francisco, and, you know, they did just fine.

Unfortunately, as I said earlier, though, if you're in New York or Tokyo or Brisbane, or wherever it may be, you have the feeling that they don't exist any longer.

We've had more problem with people thinking we were gone than people concerned about coming to San Francisco, at least in the short term.

But, no, your point is well taken. I will certainly carry that message back to our member hotels.

CHAIRMAN CLUFF: Thank you very much.

We need to move on with the agenda.

Thank you, Mr. Marks —

MR. MARKS: Thank you. It was a pleasure.

CHAIRMAN CLUFF: — for your presence here.

We'll come back now to the superintendent of schools, or the executive assistant to the superintendent of schools, Thomas Salmmon, who is here to talk to us about his role and what he learned, and what lessons he wants to pass on to us.

How can we help you?

MR. SALMMON: Good afternoon.

The San Francisco Unified School District serves 65,000 students, about 63,000 K-12 students and about 2,000 in childcare. We are located at 145 different sites.

When the earthquake hit on the evening of Tuesday, October the 17th, we still had between 1,000 and 2,000 children in our childcare centers. And they were all safely taken care of, and teachers remained with them until parents picked them up, even though it wasn't until about eight o'clock.

We closed our schools on the following day, on Wednesday, because — mainly because of the lack of power in the city. And there was some lack of water in various sites.

On Wednesday afternoon — on Tuesday evening by six o'clock, our building staffs, maintenance staff, had assembled, begun to assemble. They were completely assembled by eight o'clock. And fortunately, we have an internal radio system with — for our Maintenance Department, so we were able to immediately maintain communication and to check out all our 145 sites by 3:00 or 4:00 a.m. on Wednesday.

We closed on Wednesday, as I said, mainly because of the lack of power in the city and, in some cases, the lack of water. At one o'clock on the afternoon of Thursday — pardon me — on Wednesday afternoon, we ascertained that the schools were safe, for the most part, and we opened school on Thursday. We felt we had a — we owed a debt to the students and to their parents to try to get children back into a safe environment, a stable environment, and therefore, we decided to open the schools.

We had them all checked out, and all but 27 of the 145 sites were able to reopen on Thursday.

It took children slowly some time to come back. Many of them had property damage in their own homes. Many of them had members of their own families who were — who were killed in the earthquake. So, it was about three or four days before we were able to return to normal status.

I might say that we had two things in our favor: that in the 1970's, there was a thing called the Field Act, and there was a Field Acting of schools. And many people thought that that was rather unimportant at that time, but San Francisco met the Field Act, and we structurally strengthened 56 or our schools during the 1970's. And I'm very pleased to report that none of those sustained any substantial damage. So, while it didn't seem as important then, it seems very important now.

We were able, by the following Monday, to resume school at all but four sites. Only one of them has potential structural damage. And I'm talking about school sites now. Only one, and that is

John O'Connell Trade and Technical High School, which we have relocated temporarily while we examine what the damage might be. We have another school underneath the freeway off-ramp here at Franklin, the 101 Central Freeway, and because of the closure of the freeway, we have relocated that school temporarily. We had another school in the heart of the Marina, in the disaster area, and we relocated that school temporarily. And fourth school that we were not able to reopen the following Monday was the Marina Middle School, which was a mass care center.

Since then, we have opened Marina, so we just have three schools that are displaced.

I might say that overall, we just have one school site that causes us concern. However, with our central building, administration building, at 135 Van Ness, we have a building at 170 Fell, in that square block, which we feel will not be useful in the future.

So, that shows the contrast between the schools that were structurally strengthened under the Field Act and those buildings, school buildings, that weren't strengthened.

We have another north wing of the building which we — may not be able to be reconstructed, and we may have to tear that down.

But we feel that, as a school district, we were able to respond to the needs of our students, we were able to get back to business in a rather quick manner after this serious emergency, and we feel that we were able to provide a stability to San Francisco and to the school children of San Francisco.

Now, that's not to say that we don't have a lot of damage. We have a lot of cracked windows, we have a lot of cracked plaster, et cetera. It's going to cost us millions of dollars, and we haven't come up with a figure on purpose, because we want that estimate to be responsible.

Not only do we have cracked buildings and cracked glasses, we have people who are hurting too. And there are — one of our — three of our children lost their father in the earthquake. We lost one of our teachers in the Marina District. And I think there's a lot of apprehension. We service students on Treasure Island. We have a school, an elementary school, of 1,000 students, and we're bringing children out over that bridge every morning, and teachers are going out, and we've gotten back to normal, but there are still a lot of feelings. We're still trying to bring teachers in from the East Bay. So, there's a lot of concern, but I think, basically, we have dealt with the situation in as good a way as we could, and we're, in fact, to as normal a situation.

And we hope that perhaps within ten days, we'll have an assessment of the total damage. But I think the Field Acting of schools is probably the greatest contribution to our stability; our internal radio system that we're able to immediately start to communicate at 6:00 p.m., an hour after the earthquake, and check out our facilities; and just the cooperation of all the people involved.

CHAIRMAN CLUFF: Thank you.

Let me just add to your comment about the Field Act. The Field Act was actually passed in 1933 after the earthquake in Long Beach. And then we imposed that Field Act on nonconforming schools that were built before 1933. And to me, that is the best success story that we have to tell in the State of California, other than a lot of other buildings that we know that accommodated the earthquake.

But as we contrast that with the unreinforced masonry class of buildings, it's the typical contrast that would be exactly the opposite, in that had this earthquake occurred a little closer to San Francisco, the schools still would have performed, in my judgment, as they did, and very successfully, and we would have had many thousands of casualties from the collapsed buildings that were nowhere near the standard of Field Act schools. So, we certainly are proud of the Field Act and how that's been enforced.

Could you share with us what we might do to cause the decision-making in some of the other areas that's been extremely slow, so that we can make the same progress in some of these other areas?

MR. SALMMON: I might suggest that you would go back and look at the Field Act. There's one set of schools under the Field Act that, while we fared pretty well, we have spent millions of dollars of Leroy Green monies to upgrade, and that is those with hollow clay tiles in the walls. That was probably the greatest damage to 170 Fell, was that the walls opened up and the hollow clay tiles fell out.

Now, technically, they met the provisions of the Field Act, but I think that's something you might look into as a Commission, to see if we couldn't upgrade that. That costs big bucks. It costs a lot of money, and the state doesn't have a lot of money for schools construction these days. So, it's a delicate situation. But it's one area that I think that if that could be upgraded, it would still further structurally reinforce our schools and make them even safer than they are.

CHAIRMAN CLUFF: Yes. Commissioner McCarthy.

COMMISSIONER McCARTHY: Are you able to comment on the private schools, how they fared, because they're not — they're not subject to some of the Field Act rules?

MR. SALMMON: I think, for the most part, the experience that I've had, there's one school, St. Rose Academy, on Pine Street, which I understand the main building may not be able to be moved back into. I've talked with the principal on that. That was just a preliminary — and other smaller schools, yes. But there really wasn't, among schools, as I understand, a great deal of damage.

The churches themselves had more damage than the church schools.

CHAIRMAN CLUFF: Commissioner Eberle?

COMMISSIONER EBERLE: Yes.

Mr. Salmmon, you touched on some of the effects, the personal effects, of some of the children losing maybe their parents or homes, and some of the teachers. Have you embarked on a formal program of doing professional counseling for the children to effect the long-term potential psychological impacts on the children?

MR. SALMMON: That was one of the first things we addressed, because we knew, when we brought the children back, they were going to be very upset. So we provided our teachers with materials, and urged them to spend a certain amount of time the first day — and children dribbled back on different days, so it was over a period of probably a week — to spend time with them, talking about — reviewing earthquake procedures, emergency procedures, also allowing them to talk and to express their fears and concerns.

In addition to that, our professional counseling staff, our counselors, our psychologists were made available to schools. And through our Department of Health in the School Department, we worked with the City agencies and provided referrals to community agencies where, if there were particular large group needs and school needs, that they had a list of whom they could call, specific names and numbers.

In fact, this week, the Department of Public Health is conducting workshops for central office administrators and classified personnel during lunch hours to deal with that, because we feel that that's very important because we've got to deal with our employees, to help them become stable, if they're going to be a model for the children. And then, we know that many of the students will have problem. So, we've addressed that as well as we could, and we will — if we need further efforts in that area, we intend to follow through on that.

CHAIRMAN CLUFF: Thank you very much, Mr. Salmmon. I want to particularly thank you for waiting and being flexible, due to this schedule change.

Was there another comment someone wanted to make? I guess not.

So, we are going to break for lunch. Lunch has been scheduled for the commissioners and staff in the Anza Room, near the front entrance, and the public is invited to buy lunch at the main dining room if they so desire. And we will reconvene back here — can we make it back in a half-hour? Let's do our best to be back here shortly after one o'clock, right around one.

Adjourned for lunch.

(Thereupon, at 12:25 p.m., the hearing was

adjourned for lunch.)

## AFTERNOON SESSION

CHAIRMAN CLUFF: I'd like to reconvene the Seismic Safety Commission to continue our hearing on the October 17th, 1989, earthquake.

And we're a bit behind schedule. The next speaker scheduled was Frank Blackburn, a firefighter from San Francisco.

Thank you very much for coming, and we want to acknowledge the fine job that the firemen did in this earthquake. And if you could share your experiences and what we can do as a Commission to further help, we'd appreciate it.

MR. BLACKBURN: Okay, fine.

Let's see. Is this on?

CHAIRMAN CLUFF: Yes.

MR. BLACKBURN: Oh, yeah.

Thank you very much.

My name is Frank Blackburn. And I'm 33 years with the — as an active firefighter, and I've got five years on the faculty of City College of San Francisco as a fire science instructor in fire protection matters and emergency planning.

The events of this quake that happened, you know, a week ago, to those of us in the emergency services and involved with emergency planning, have underscored several important factors that are known to us and emergency planners. And of them, number one, when the quake struck, water mains broke, gas mains broke, fires occurred, buildings collapsed, people were trapped in buildings by — and struck by falling debris on the streets, emergency agencies were swamped with calls, and emergency communications systems in effect broke down due to overload, and the coordination between the agencies and utilities during the event, because it became so overwhelming, became fragmented.

And of these lessons, we knew this — we know these things are going to happen, and we try to do a lot of planning and training to overcome these things. But my observations, based on my experience — and I've appeared in international conferences and the like over the last few years — is that — and from direct personal experience, public officials, really throughout this state and this city, whatever, they really don't listen to those of us who know about these events that are going to happen, and they don't accept the advice of the emergency personnel as to the need for staffing, planning, and basic equipment to have on hand, you know, that the people of the entire state are going to need.

That happens in every event. And we hope that the example of this one here in the Bay Area, in San Francisco, can help to overcome some of these problems, and as — and I also understand, you know, that also in this state, politics comes into it. There's a lot of competing forces for the tax dollar. However, the public good and safety is very critical, and in many cases, people have said, "No, it's going to happen later this year," "It's going to happen ten years from now," and "Maybe we can put it off a little while longer."

But this quake and the one that happened in Whittier show us that we can't wait too long, and certain things, basic things, should be implemented, funded, and, you know, really discussed on a public level. I've made certain recommendations, and I've given them to Tom Tobin. They're in writing. And they reflect on the things that happened in this event last week, and I'd like to go over each one with you, if I may.

Number one, each large — each large urban area in the state should have a study done to determine the problem of fire following an earthquake. Fire following an earthquake is a known phenomenon that happens. We had 27 fires in San Francisco following this quake, immediately following the quake. And it also happened in the Whittier quake. I think there was 100 fires that happened following the Whittier quake.

And the largest single incident of the recent San Francisco quake in San Francisco was the Marina District fire. And in that fire, we had a 40-square-block area that was totally without all water supply, many collapsed buildings, and the fire rapidly got out of control. And only because of some planning that had been going on in this city in the past several years, utilization of a fire boat and aboveground portable water supply system, we were able to actually confine the fire to half a square block and extinguish it.

Had we not had that equipment on hand and the training, the other positions, the fallback positions, were Lombard Street on the south, and to essentially Fillmore Street on the east, and we probably would have taken between one-half- to another one billion dollars in fire loss, in addition to quake loss, in that particular area. Those are kind of the numbers and the things we're dealing with.

There has been a study done for San Francisco and Los Angeles on fires following a quake, but it's a — it's something that, really, people don't want to listen to. The insurance companies are well aware of the implications of fires following quakes, and the conflagration hazard is very great in built-up urban areas.

And I recommend that, actually, if the state could, get something going in all the urban areas of the state to have — get some studies like that going, to alert you to the problem. The scope and scale and size and the economic effects are critical.

The 1906 quake, for example, when that happened, we lost a water supply; 28,000 buildings were destroyed.

Some real basics for fire agencies: every fire station in the state constructed prior to 1976 should be reviewed by a structural engineer for safety and functionality following an earthquake. In San Francisco, again, they have had a program in the fifties that reinforced several stations. They have a bond issue on the ballot this November to upgrade the remaining stations. but many stations will suffer damage, and you can't get the doors open, or they'll jam, or — in the Coalinga earthquake, one fire station was severely damaged.

Fire stations are the critical agency structure that has to not only survive the quake, but has to be functional following the quake. And a statewide study should be instituted for that purpose and to determine what the needs are on a county-by-county basis.

Every fire station in the state should be — it should be really the state law — should be required to have an auxiliary generator for power. Our stations, only about 14 of them have generators in San Francisco. They have a program to implement on the rest of them. But I can tell you, without an emergency generator, it becomes like camping out. And after — in the nighttime period, it's extremely difficult to function, and things kind of grind to a halt, though you do make it by personal fortitude. But every fire station in this — throughout the state should be required to have an electric generator.

Every fire station in the state should also be required to have at least a 500-gallon underground fuel tank. Had this event gone much more than it had, I know the — in San Francisco, there was a serious problem with fuel for the fire engines, and they had a — and every station does not a have a fuel tank, due to some environmental problems. But fuel — an emergency organization has to have fuel to operate. The fuel tanks of the fire trucks run dry after four hours. And if you have an event that's going to go on for several days, you're going to have to have access to fuel.

It's so basic. However, on a day-to-day basis, it's amazing what does go on. But fuel needs for emergency needs are not really addressed.

A fifth one, the water supply systems of each county in the state should be analyzed as to their vulnerability to damage in the event of an earthquake. Again, it happened in San Francisco. In our municipal water supply system, over 100 breaks occurred, the Marina District very heavily impact, South of Market, plus other districts as well. It also has happened down in the Los Angeles area.

And many people don't realize that the underground utilities will fail. And when the water supplies fail, the fire hazard becomes extreme, and then the economic losses, both to the economy of the state, the governments, are very extreme and can be virtually — cause an economic downturn in the entire state, if we took a major loss. And the conflagration risk in areas like San Diego, Los Angeles, San Francisco, the Bay Area, are very high.

Every fire pumper in the state in any organized fire department should be required to carry at least 20 feet of hard suction hose. Most of the fire departments in the state — now, the state agency appartus, and San Francisco does, Oakland does — but most of the fire departments have taken hard suction hose off of their trucks. In an earthquake mode, when water — normal water supplies are down, we have to take suction by draft from the bay, a river, swimming pools, any static source.

A mutual aid exercise was conducted last year, and mutual aid engines came up to assist this one agency. None of them had suction hose; they couldn't participate. It is so basic. Hard suction, a length of hard suction, costs $150 to $200. It is something I think should be addressed on a statewide basis as well.

A statewide review of emergency water supply systems for built-up areas is necessary. This is to recommend constructions of underground cisterns in strategic locations, or suction connections, or suction hydrants to static sources of supply, such as rivers, lakes, or whatever.

A portable water supply system equipment should be available on a county-by-county basis. It can be used for earthquakes and also for wildland fires.

Continued training exercises on a county and regional basis to enhance the coordination of public agencies. Now, what happened in this incident, the recent quake, we ended up down in the Marina District where virtually each department had their own separate command post, despite plans and stuff not to do so. We ended up with a fragmented operation.

And during the actual emergency, it worked quite well, but then later, it degenerated into a fragmented operation. And quite frankly, it shouldn't happen. And what is needed is more training exercises. And believe me, even in — I know, within one county, it's very difficult to get all the agencies together to have realistic drills. In many cases, you can't get the heads of the agencies to come. They keep wanting to send their subordinates. And they have to — these things — agency heads, in a time of crisis, they're responsible. If you don't have any training, I'll guarantee you, you won't perform at your most efficient basis when the incident occurs. And more regional training needs to be done.

In general, the earthquake problem and the enormity of the situation has to be a little more seriously taken into account by all department heads and government agencies. Although I know it's difficult and there are day-to-day operations — you know, you really get engrossed in them, and to think about an earthquake, they say — again, they're saying, "When's it going to happen? Maybe twenty years." Well, when it happens, you're the guy on the line, your agency's on the line, and everybody's looking to them for the leadership.

Communications needs. Again, it happened, it happens again and again, and I don't know the correct answer to this one. But we really need to look at our emergency radio network, both on our daily basis, and when these big events occur, we need more frequencies to operate with. I don't know how that's to be done. I honestly don't. I'm not a communications expert, but I do know we had — we've experienced communication total overload, and I know that other agencies have as well, and I know that it happened throughout the state in other earthquakes also.

That's something that has to be studied, and to come up with how to function in an enormous event like this so our communications don't get so overloaded and saturated that they no longer become effective. Because, without communications, it's extremely difficult to manage an event such as this.

And then, the final one, is a study of adequate personnel for fire protection. I can tell you, throughout the state, the current normal daily staffing is totally inadequate. Our chief recognized this, for example, and at the Fire Commission meeting last week, he stated publicly that the San Francisco department had inadequate on-duty staffing to handle that event. However, the departments — the political, you know, forces force those cuts on you, and we should — again, it should be looked at statewide, what do we — what are our actual resources, and how do we overcome that?

What we did, we called people back. People came back in San Francisco, and I think they received — something like 300 men came back on duty within a three-hour period. However, that's not really an effective way to do it. And the personnel issue should be looked at.

In San Francisco, when the quake struck, they received 400 calls for assistance within two hours of the event. And that was, as I say, a total overload. They had the — the Marina fire was going on. That was the main event. Plus they had collapsed buildings — on Sixth Street, six people were killed when a building collapsed on the people in their cars — and many calls for assistance, gas main breaks, leaks, and a whole host of things happened throughout the city.

One thing that was very difficult to work with was that the entire city was pitch black, with all loss of power. And that continued for a full 24 hours. And in the downtown area, it continued for almost three days. And to operate completely without electric power was extremely unusual and difficult, and rather eerie, I can say from personal experience.

That's all I have. If you have any questions, I would be very happy to answer any questions you may have.

CHAIRMAN CLUFF: Yes, I'm sure there will be questions. And I had a comment, and then a question.

I think you referred to the performance of underground utilities and so forth during earthquakes. I'd like to comment on that, in that our total experience around the world is that underground facilities, whether it be trains or tunnels or utilities, usually perform very well, unless they're in areas where you have geologic or soil conditions that will cause the ground to fail. And, of course, we know that's what happened in the Marina.

And according to the maps that have been around for a long time, even shortly after 1906, we've known that that Marina area is an old lagoon that was filled in. It was a soft geologic site, with liquefiable soils. Was that fairly widely known within places in the fire department and so forth?

MR. BLACKBURN: Yes, it is. In San Francisco — yeah, that's a good. That's what I'm saying, is that every jurisdiction should have a study done. We had a study done for San Francisco by Cornell University. They did it for both the Water Department, Fire Department, and we have ten known — ten areas that we call infirm ground: the Marina, which is actually the worst, because it's mud fill, and then we have all the area below Montgomery Street, then south of Market, and then in the Mission District, from Dolores to — there's a big area from 11th to 19th, and from Dolores to Alabama.

And, yeah, in those infirm — filled in, where there's a former creek bed, a marsh, riverbed, lake bed, or bay fill, underground utilities in those areas more likely will fail.

And then, the problem is, is that our underground water systems are so interconnected that when they fail in those areas, they will bleed the system dry, unless you have sufficient valving for pressure zones to provide for that. But it's something that should be analyzed. Many — many areas of the state — and a good example is Foster City — Foster City used to be, you know, at high tide, all underground. It's all filled in, and there's an area, as I just say — you know, it's down by the water — like the Marina did the same thing, they filled that in for the 1915 fair — it's a beautiful area and close to the water, but you're sitting on a really — a seismological time bomb as far as, you know, potential fires and damage and things of that nature.

CHAIRMAN CLUFF: Fine. Thank you.
Other commissioners?
Dan? Yes.

VICE-CHAIR RIORDAN: Oh, excuse me. Go ahead, Dan.

COMMISSIONER EBERLE: When you were talking about your recommendations on exercises, you mentioned that there was fragmented operations and incident command centers. Are you talking — were you talking primarily for fire command centers, or were you talking about other types of command centers, emergency management? Could you expand on that a little bit, please?

MR. BLACKBURN: Sure. What I'm talking about is that in an event like this, all the agencies have to come together. Like we have an Office of Emergency Service, and Tom Jenkins will speak on that later. And all the department heads will meet at the Office of Emergency Service and set up the command post. And what — and they did do that, here in San Francisco, and it functioned during the event relatively well.

And then what happened, at a later time, down in the Marina District, with — of course, the event doesn't go on just for that one day, it goes on several days — and other agencies set up their own command posts shortly thereafter, so that we ended up — PG&E had one, the police had one, the fire department had one — we ended up with four or five different command posts down in the Marina District. Okay, we functioned, but that's — I don't know if that's the best way to do business. In fact, I know it's not the best way to do business in something like this.

But in the haste to get their agencies going and whatever, you ended up in a — it became to be fragmented — the effort is all well and good. And I'm just saying, these things — to keep control was difficult. The department heads and the organization, like from San Francisco or any city, you have the mayor and your city councilmen, the department heads, and they have to keep that team together and effective to manage that event, not just during the actual — you know, the initial hours that are hectic, but it's going to go on one or two or three days later. That's kind of what happened.

CHAIRMAN CLUFF: Barbara, did you have something?

VICE-CHAIR RIORDAN: Yes, I did.

Mr. Blackburn, I had heard that you had a portable water system that you used in the Marina, and I'd like to know a little bit more about that. I understand that perhaps there was some sort of a ballot measure here in San Francisco that gave you that ability to fund it. And then, what my question is, how did it work, and how much is that kind of a system to purchase?

MR. BLACKBURN: Okay. The portable water system
— what happened was, we had a bond issue in 1986, $46 million, to expand emergency water supplies in San Francisco. And a companion measure — because the portable water system is portable equipment, bond funds can't be used for that — Mayor Feinstein authorized $1.3 million to construct the equipment for a portable water system, the start of it, for the San Francisco Fire Department. And that was done. And that was used at the Marina fire.

And the — San Francisco is kind of blessed, in a way. Following the 1906 quake, with a real shortage of water, they had put in emergency water systems, underground cisterns and a high-pressure system, throughout that part of the city. We're now expanding it to the other areas of the city.

And — but the portable water system, we developed it ourselves. It's been developed here in the city, and it's the only one of its kind that's deployed. And we have four trucks. They carry from 4,000 feet to 1 mile of hose on the trucks, large-diameter hose. And what they actually do is lay an above-ground water main. We have devices called portable hydrants that connect into them. They pump at high pressure from any water source. In this case, they used the fire boat. And then you can — you put pressure-reducing valves on the portable hydrants, and then you take off whatever pressure or volume you need to fight a fire.

And then the truck it carries on has a large monitor, and that monitor is designed to fight very large fires, like square-block fires. And that's how they fought this fire. The fire boat came in — in fact, they've had training exercises — they had one three weeks before this event with the fire boat. The fire boat came in and tied up. They led — they led the portable system up to the fire. Within ten minutes, they had water flowing on the fire, and they stopped the fire at that point, with that particular truck. Two more came in, and then, within 35 minutes, they had the fire out.

Now, they were setting up the next block. They had written off that entire square block. And once they got into operation, they were able to contain the fire.

VICE-CHAIR RIORDAN: Does the system require something like the bay, or can this be in a more arid area, where you wouldn't have, necessarily that great size of — amount of water?

MR. BLACKBURN: Yeah. Well, in this case, the bay happened to be the most convenient source of water, but it can be any source of water.

VICE-CHAIR RIORDAN: Okay.

MR. BLACKBURN: For example, that's why, in San Francisco, we have these underground cisterns, 75,000 gallons capacity. If you go on Van Ness Avenue, every three blocks, there's a cistern, and then along Dolores Street, every three blocks, and then other other areas. So, if a fire is more inland, then you can — a pumper can go to a cistern, take suction, and you can lead the portable water system to wherever the fire is. That's the delivery system. And you can go up to a mile.

So, you can go within a mile of any water source and still have an effective water to fight fires. And then, following the fires, it can also be used to provide drinking water, if it's necessary.

They — in 1987, they had a ten-day operation up in the Sierras. They sent our portable water system and three pumpers up there to protect the city, power plants, and other buildings up at Early Intake, and they were there for ten years (sic) in the rural setting. And they took water from the Tuolumne River.

We also supplied the City of Brisbane for three days with drinking water when their water was shut down in July of '88, and we used the portable water system for there, and also assisted East Bay MUD — I think it was in '86 — when they had a water main shutdown over in Dublin.

VICE-CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Yes, Bill?

MR. BLACKBURN: Yeah.

COMMISSIONER WASTE: Mr. Blackburn, your question about back-up generating capability was interesting. As I understand it now, there are still 26 stations that do not have that capability. I'd like to have you respond to that. And also, do the police and the major medical facilities have that kind of back-up?

MR. BLACKBURN: The police stations have emergency generators. I think there's only seven police stations. Fire stations in San Francisco right now, 14 of them have generators, another 12 are in the process of having them installed, and they don't have funding for the remaining 14. But the program was started in this city, to be implemented.

And I believe the City of Los Angeles, they all have an emergency generator. But, again, it's — fire stations are such a critical unit for any community, and it should — they should all be required to have one.

I'll tell you, operating without electric power, and you're an emergency, and you have an off shift coming in, you have the communications, you have — it's very difficult without electric power.

COMMISSIONER WASTE: How about our major medical facilities?

MR. BLACKBURN: Yeah, they have — well, the only — the emergency medical service, they have — the dispatching center has a generator.

CHAIRMAN CLUFF: Bob, you had a question?

COMMISSIONER McCARTHY: You mentioned that you recommended a 550-gallon underground tank at each firehouse, and then you just blithely went over that there are some real serious problems with the environmentalists' view of that. Is it practical to use an above-ground tank as an alternative? Would you comment on that?

MR. BLACKBURN: What was that? I didn't — your last —

COMMISSIONER McCARTHY: An above-ground rather than underground tank?

MR. BLACKBURN: Oh, yeah. It could be an above-ground tank. I just said underground — that's — in most cases, that's what we have, is an underground tank. But it could be an above-ground tank as well, although you need a lot of room for that.

It's more — I think in urban areas, it's very difficult to have an above-ground tank, but a rural area probably could. In the urban area, usually the only choice you do have is an underground tank.

But what happened, the previous — the old steel tanks would leak. That was the environmental problem. But they do have the new tanks. What it gets down to again is money. The public officials don't want to — they take — I know in San Francisco every fire station had a tank. They yanked all the tanks out, and we only — I think we only have about eight stations with tanks now. And we have real bad fuel problem.

We pointed this out, and we said, "Hey, you've got to have a fuel tank, because when things start happening and you run out of fuel, you're in trouble." If this event went more than one day, they were — we had — there would have been serious problems in this city, as far as fuel goes.

CHAIRMAN CLUFF: Commissioner Iwan.

COMMISSIONER IWAN: In earlier testimony, Ms. Wells, who is a resident of the Marina area, was complaining at the amount of time that she thought it took for the fire people to respond to that fire. Could you comment on that? And, I think, even more generally, just comment on the question of how difficult is it for fire personnel to find out where they need to deploy their resources. That may have been one of the problems. You indicated there were a lot of different fires. It may not have been known that that was the major fire.

Could you just maybe comment on the amount of time and the process of determining where to deploy the resources?

MR. BLACKBURN: Sure. That was a problem.

That fire, the sequence was that a — the fire department received a call for a — to assist a citizen that was hurt on the street at Fillmore and Cervantes. And the engine company that responded there was there, plus two other engines came. They just — two others were dispatched there, and that was at 5:40, so that's some 36 minutes after the event. While they were there, they saw the smoke from the fire, and that's how they — and then they went over there in that neighborhood, the first engine on the scene. The fire hadn't been reported.

COMMISSIONER IWAN: Do you think it was because telephones were out?

MR. BLACKBURN: No. I think — there's a phenomenon — I've talked to a couple of eyewitnesses, a woman who was at Number 2 Alhambra Street, and she was just backing her car out of the garage when the quake hit. She actually saw the building collapse on Cervantes. She saw —she said the sidewalks exploded, and there was concrete, you know, flying in the air. She was terrified — she's 33 — and she said it looked like — she felt like she was in a science-fiction movie, all these things were happening, and then the strong smell of gas.

And then, she said all the people ran out into the center of the street, came out of all their buildings. People were jumping out of that building that was collapsing. And she said they all went in the center of the street and just talked. The people were quiet; nobody was screaming — I was at Candlestick, incidentally. And she said then they all started talking, and then she said, "Why isn't any — why isn't the fire department here? Why isn't the police department here?" And nobody — at least to her knowledge, nobody really called them.

And I think people kind of go into semi-shock, and it doesn't really happen. They're all too busy taking care of the immediate thing. And that was never — that fire was never reported to the fire alarm office. Our deputy chief, the first inclination that he knew it was a serious fire, he saw it on public television. They were taking a photo, I guess, from the blimp.

COMMISSIONER IWAN: From the blimp.

MR. BLACKBURN: Yeah.

COMMISSIONER IWAN: So, do you know of any way to get around this problem? Is there any way that you could —we have a lot of technology nowadays. We can sense water main breaks probably by pressure reduction, these sorts of things. We can even measure the ground shaking and see where it's shaking hardest. Is there any way that you could get that information without relying upon citizens?

MR. BLACKBURN: Well, what can be done — the water problem is solvable by putting in pressure gauges at different locations. In fact, we're doing that here, in this city, for our high-pressure system. And you have a low-pressure alarm. When the pressure starts dropping, you know there's a problem.

But the thing is reconnaissance. We have to come up with some type of — now, it's really difficult. I don't have that answer either. But I think you can target the areas. Like in San Francisco, we know that the Marina, for example, these soft soil areas, we know there's going to be problems. And maybe a way is — after a study, is to have those particular areas surveyed rapidly, as rapidly as possible.

Helicopter is the best. Like the Los Angeles Fire Department has helicopters. They can go out and do helicopter observation. We don't have a helicopter here. No fire department in the Bay Area has a fire helicopter. And I think the only helicopters available immediately are from like the television stations. So — but they could be commandeered too.

That's something that has to be relooked into. And I, quite frankly, don't have that answer.

COMMISSIONER IWAN: Thank you.

Tom, I think you had a question you'd like to ask.

EXECUTIVE DIRECTOR TOBIN: Do you have time?

CHAIRMAN CLUFF: We need to move on.

Go ahead.

EXECUTIVE DIRECTOR TOBIN: I can do it later.

Well, it wasn't so much a question. It's just sort of a statement that — Frank knows of my thoughts on this, and I really wanted to say them publicly — that really, had it not been for his idea to get the ballot measure and the high-pressure water system, the portable water system a few years ago, that system would not have been available. And the stories I hear is that we would have had dynamiting along Chestnut Street in order to save the rest of San Francisco from the Marina District.

And after 1906, you know, General Funston was the hero that saved San Francisco from total destruction, and I think in 1989 it's Frank Blackburn and, you know, this — I don't know — the kind of heroism that's done in the bureaucratic trenches is something that goes unrewarded and unrecognized. And I think that, you know, Frank really is the person who, because of his initiative, saved San Francisco from this fire.

And that's not just my opinion. I've actually talked to several people on it. And I don't expect Frank to — I hope he doesn't comment, because he'll probably disagree with me. But that is the truth.

MR. BLACKBURN: Thank you.

CHAIRMAN CLUFF: Thank you. Well, thank you very much, Frank, for coming. We appreciate your taking time.

MR. BLACKBURN: Okay. Thanks very much.

CHAIRMAN CLUFF: The next — we're switching the agenda a little bit, and we're going to have the Red Cross people — Allan Whear — be the next speaker. And then that will be followed by Tom Jenkins of the Emergency Services.

MR. WAGNER: My name is Daniel Wagner. I represent Allan Whear, who could not be here today. He's in Watsonville. My function is director of Red Cross operations in response to the earthquake for the Bay Area, but I will speak on behalf of the organization.

Our response, of course, was immediate to the earthquake. We — let me tell you where we stand today. We have, on our damage assessment, about 21,000 dwelling units affected. And this includes dwelling units that have minor damage, major damage, or are destroyed. Approximately two-thirds have minor damage, according to our survey, "minor damage" meaning the dwelling is habitable. So, approximately one-third of those dwellings, in our assessment, appear to be not habitable due to earthquake damage.

Many of those buildings are here in the Bay Area, and they are structurally still in place, of course, but have been red-tagged by City engineers who have determined structurally they are not fit for habitation.

At this time, our estimated cost of disaster assistance is just over $10 million, based on that damage assessment. And we, of course, are in the midst right now of conducting a very major relief effort to provide that assistance to disaster victims.

We have disaster service centers opened in all of the effected communities, where families are able to receive individual assistance. We have representation in each of the federal disaster application centers, where families can receive information on where they can obtain Red Cross services.

At this hour, we still have 1,609 persons in disaster shelters in the Bay Area. These shelter facilities are on the — many of them are on the Presidio. We have five disaster shelters on the Presidio, we have one at the Marina Middle School, and we have one at a privately owned building on Polk Street in San Francisco. In Oakland, we have seven disaster shelters. All of them are in school buildings.

One thing that we're dealing with right now is a need to move from many of the school facilities because the school districts have indicated that they're eager to return to normal, day-to-day functioning. And in many cases, particularly at the Marina Middle School, our shelter operation is interfering with their ability to resume normal operations.

We've had some firsthand experience with what I've learned to call the Katz Bill, and I presume that most people here are familiar with that legislation.

We have received notice from the San Francisco School District that we need to be out of the Marina Middle School, in part by Wednesday, entirely by Friday of this week, and it's caused us some concern, because we have been unable to find alternate facilities at this hour for those people to be relocated to.

As you know, we were requested by the City to leave the Moscone Convention Center about one week into the operation, and we relocated those people to the Presidio. So, at this hour, we are continuing to search for facilities that we may be able to house these people in until more permanent arrangements can be found.

In the Bay Area, probably our biggest concern at this point is dealing with a large number of urban poor, who have been — become part of the relief operation, many of whom may have had chronic housing problems prior to the disaster. So, we are struggling with a sensitive issue.

Our mission, of course, is to assist people on an emergency basis, to meet disaster-caused needs, and we're faced with a situation where it's not black-and-white in most cases as to who has disaster-caused needs and who has pre-existing needs. So, we're working very closely with city government in Oakland and in San Francisco, and county government, to see that our efforts meet the immediate needs that are indeed caused by the quake, as well as contribute to the actions that those cities will take to deal with the chronic situation, which indeed has been aggravated by the earthquake.

These are the prepared remarks I have, and I know we have some time left, so I would like to, I guess, entertain any questions at this point.

CHAIRMAN CLUFF: Fine. Thank you very much.

Do we have questions from commissioners?

Commissioner Waste?

COMMISSIONER WASTE: How does the Red Cross, in a situation like this, work with the other agencies, like the Salvation Army? And I'm sure there's other private groups that —

MR. WAGNER: We have a function in our disaster relief operation that does voluntary agency liaison. Last Friday, we met with all of those agencies, including the Salvation Army, many of the church groups that are involved, and examined what it is that each of our agencies was doing in response, and we looked at some ways that we might be able to more closely coordinate our activities.

So, they are operationally coordinated to some degree through that voluntary agency function. And I don't know of any significant problems that we've had doing that. There are many agencies, of course, involved in the response — the Salvation Army, we're working with a number of churches. And I'm not aware of any acute problems that we've had in that area. We do have a formal voluntary agency liaison function. That function is in place and has been working adequately, from my perspective.

CHAIRMAN CLUFF: Yes. Commissioner Eberle?

COMMISSIONER EBERLE: A follow-up question to that. How about the county offices of Social Services? Are you working closely with them?

MR. WAGNER: We are. In San Francisco, we have daily contact with Julia Lopez, who's the manager of DSS for the City and County of San Francisco, and with her counterpart in Oakland. And we've had very effective relationships with those people.

They have, of course, a lot of interest in the chronic problem. They deal with it on a day-to-day basis. And they're eager to work with us to make sure that what we do is consistent with what they will have to do on a long-term basis.

So, we're satisfied that we have a close liaison with those offices, and we're working cooperatively to make sure that our efforts are consistent with what will have to happen on a long term.

For example, in selecting shelter facilities, we're attempting to pick buildings that may ultimately be turned over to either — to an agency that might work in cooperation with DSS to provide housing for the chronically homeless on a longer-term basis. So, we're being careful in selecting facilities. We're doing it in cooperation with DSS and the city officials.

In fact, we would prefer that the city designate the facilities, and we would operate them. And that's basically our policy at this time. And we hope that that will contribute to some longer-term solutions to what is a chronic problem.

COMMISSIONER EBERLE: I have a follow-up, another question.

CHAIRMAN CLUFF: Okay.

COMMISSIONER EBERLE: You mentioned about the need to move your people shelters from schools and things like that. That was also a finding of the Whittier earthquake. It was a major problem there. Were you aware of that finding in the Whittier earthquake?

MR. WAGNER: I was not. I'm actually from Dallas, Texas, so I apologize for some of my lack of experience with earthquakes.

But we have found, if you look at the — what I know of as the Katz Bill, there is a clause in there that allows the school district, the governing board of the school district, to determine what — it says "deems necessary" — when the school board deems it necessary to make facilities available, they will. And they've deemed necessary to this point.

We do, however, have a letter from the superintendent of schools for San Francisco asking that we make every effort to be out of that facility by Friday.

COMMISSIONER EBERLE: Will you be exploring long-term shelters in the future?

MR. WAGNER: One of the criteria — we are examining many facilities, state, federal, and city-owned facilities, as well as private facilities. And one objective that we have, one criteria that we have, is longer — long-term availabiltiy. We've had some buildings offered that have two-week availability, and we've declined those, because we are — we are eager to help the cities deal with what we perceive to be, in part, a chronic problem. And we think that finding facilities that might be available for a longer term would help, help in that direction.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Barbara, I think you had a question.

VICE-CHAIR RIORDAN: Yes, a very brief one.

While you're providing shelter, have you encountered much of a difficulty with language barrier? Have you — have you noticed that, or have you been able to overcome that readily?

MR. WAGNER: I think we've overcome that. It has — it is an issue, but more so in the direct service area, where we're providing individual assistance in service centers, where there has to be a lot of interaction with the client. And we, of course, make sure that we're providing bilingual people in those — in those situations.

It's not been a big issue, as far as sheltering goes. Certainly, we have some monolingual people in the shelters, and we do make every effort to be sure that our personnel in those facilities are bilingual.

I'm sure there have been some isolated incidents where we've had difficulty communicating, but I don't know of any widespread problem.

VICE-CHAIR RIORDAN: Okay.

CHAIRMAN CLUFF: Yes. Commissioner Bolt.

COMMISSIONER BOLT: I'd like to ask you whether, in your view, there was ever a time in this earthquake aftermath when the Red Cross was crucially short of money to do what you wanted to do, and then, perhaps, if you would speculate on a similar question, if you were asked, after a larger, nearer earthquake, with, say, ten times as many people affected.

MR. WAGNER: This earthquake has been a significant test for us, because we have a large percentage of our resources deployed on Hurricane Hugo, as we speak. Roughly two-thirds of our preidentified human resources, the people that are part of our response to disaster on a normal basis, are — have already been deployed on Hurricane Hugo and were not available for this response.

We've not had — that has stretched our agency, but it has not caused any acute problems. It slowed us down a little bit.

As far as having the financial resources to do it, we have not — that has not been an issue. In fact, the response of the American public has been overwhelming, as far as contributions to our relief effort. And I think it's safe to say that we will have paid entirely for this disaster relief operation through contributions that have been made by the American people to date.

COMMISSIONER BOLT: Will you speculate on a larger earthquake, with about ten times as many people?

MR. WAGNER: I'd be reluctant to speculate. I would — as long as the response as far as contributions were in the same proportion, we would be okay. If they were proportionately larger, we certainly would be in a satisfactory position to have the funding we would need to provide the assistance. But I —

COMMISSIONER BOLT: Do you have enough staff? Suppose there was no Hugo.

MR. WAGNER: If there were no Hugo, if it were ten times this size, we would — we would again be stressed. But I believe that — two-thirds of our personnel are on Hugo right now. The other third is basically here. We would definitely be in a position where we would be stressed.

But we have — the preidentified resources, the people that are part of our disaster service human resource system, are the ones that regularly respond to disasters, two to three times a year. We have many thousands of employees and volunteers around the country who we don't normally tap for disaster response. Certainly, in a major event, a catastrophic event, if the catastrophic plan were activated, those people who aren't normally called in to service, who are very qualified, would be.

And I think — we have not tapped those resources as of this time. We're still pretty much working within our normal disaster service human resource system, as we would for any other type of disaster.

I would like to comment on the fundraising efforts. Prior to the earthquake, we had initiated a $42- million campaign to raise funds for Hurricane Hugo. Our fundraising effort was expanded following the earthquake to raise funds for disaster relief. And that campaign has been very successful, and those funds will be applied to disaster relief operations, both on the East Coast for Hugo and here for the earthquake.

COMMISSIONER BOLT: Thank you.

CHAIRMAN CLUFF: Thank you very much. We appreciate your time.

MR. WAGNER: Thank you.

CHAIRMAN CLUFF: We'll go back now to Tom Jenkins.

We want to thank Tom for graciously accepting a change in the schedule there.

And the next group of speakers will be from PG&E.

So, Tom, you're going to talk to us about the emergency services.

MR. JENKINS: Right.

Commissioners, when the incident occurred, I was moving toward the bay at Sixth and Howard and thought I'd had a flat tire, until I looked up and saw the buildings on the corner of Sixth and Howard, each side, which appeared to be deflecting about 4 to 5 feet. And my daughter and I looked at each other, and I thought, "Uh-oh, we're going to be buried under rubble."

I immediately recognized the fact that it was a major earthquake, and I — my vehicle is radio-equipped, and so I immediately radioed to the emergency coordination center and told the Department of Electricity representatives that are there on a 24-hour basis to immediately activate that center. And I headed back toward that center, which is at 1003 Turk Street, between Gough and Laguna.

Upon my arrival there, the radios and what have you that we do have as links to our respective departments had been operational, and the people were beginning to — at least the Department of Electricity people were beginning to open up all the supply lockers that we have.

Fortunately, over the years, we have had some exercises at this facility. It is very inadequate. And only designated people have been assigned to go there. And as the realization occurred to those individuals, they responded to that emergency center, so that, under the circumstance, that center was quickly activated.

I spent the next five days at that center, along with my assistant. Now, my assistant had just crossed the Bay Bridge, was unaware that this earthquake really had occurred. He thought he had a flat tire, until I got on the radio to him and told him that there was an earthquake and that he'd better get himself back to San Francisco as quickly as he could. He subsequently learned that the Bay Bridge was down, and had to find his way around, back through Marin County.

He indicated to me that this was the first word that he knew that there was an earthquake. The radio stations hadn't even picked it up at that point. So, knowing that the radio stations monitor all our governmental frequencies, I don't know if they learned it from us, that an occurrence had occurred, or not, but at least my assistant seemed to make that assumption.

So, as I said, most of the principal participants that were designated to come to that facility — and I might list them — the mayor is supposed to be coming there — he was at Candlestick Park, and had a time trying to reach us — the director of Public Works arrived, Public Health, myself, the chiefs of fire and police, as well as the personnel needed for radio — manning the radios, with links to Public Works, Municipal Railway, police, Red Cross, state and local government.

So, at least that facility, early on, was activated and was beginning to respond, although the information that was coming in was very sketchy. We were approaching, obviously, darkness, and so the director of Public Works, who has overall responsibility for damage assessment and all construction engineering, made arrangements with Clementina, and they had light sets brought out to the facility.

That facility does have emergency power, because there was automatic loss of power and both generators came on, and those generators ran for about three days. We lost one of the generators because, apparently, it was out of synch with each other, and rather than burn it up, they cut it off. And that one generator maintained the power for the facility, although we were very cognizant of the need to cut back any unnecessary use of lighting or whatever. But, in any event, that emergency generator did its job.

We did not lose any of our telephone service in and out of that facility. In addition to the normal Pac Bell/AT&T domestic lines, we have our own telephone system in the city, which we call METS — that's called the Mayor's Emergency Telephone System. It's a system that was in place in 1906, survived that catastrophe, and had been upgraded over the years by new cabling. In fact, we almost lost it about four or five years ago, but we were able to retain it, and it really proved its worth. We are now in the process of automating that.

During the incident of the 17th, the old board, the old manual board, which is located at Hall of Justice, was automatically manned by the police department. That was the agreement. And when they turned that — when we turned it off on a normal, day-to-day basis, they agreed that in the event of a major emergency, they would man that telephone, which they did. So, it worked very well.

As I said, though, all the communications were up. We didn't lose anything, the microwaves or anything. They were up. The only problem that we did have was with the state-local government. For some reason, we have two radios, consolettes, in our facility, one upstairs and one downstairs. We could broadcast or transmit and receive on the upstairs one, but for some reason or other, the one downstairs wouldn't work. So, that was the only communications problem that we had.

The Red Cross is written into our San Francisco Administrative Code as the arm that takes care of temporary lodging and feeding and et cetera. And immediately, there was a response to our emergency coordination center from Red Cross headquarters, which is only a matter of about four blocks or five blocks from us. And they went into operation with their radio system.

We also recognized the immediate need for cots and blankets. We also are aware that the Red Cross doesn't have that many on hand. They have to draw upon resources up at the Army depots up in the Valley. Fortunately, we in the city had on hand about 1,800 cots and a like number of blankets, which were immediately made available.

The purchaser had responded, along with his assistant, to our ECC, as he was supposed to, and immediately recognizing the need for cots and blankets, he dispatched his assistant to the storage area out on Geary Boulevard and made available those cots.

We also immediately coordinated with the Department of Public Works to provide trucks and some drivers to pick those up and make some distribution runs of this equipment, which they did. It worked out very well.

I think that, as a quick overview, we had tremendous cooperation between all departments during the emergency and the subsequent operations thereafter. We were fortunate that none of our response personnel sustained any fatalities or major losses in the sense of medical losses.

Also, it was recognized, we need water, because it was known that the water was out. The Water Department person who responded to the coordination center made us aware of that very quickly. He had communications with his people, and we learned that the fire department had bottled water at one of their engine sites out in the avenues, and it was loaded and ready to move, and we told them to direct that to the Marina Middle School. So, the immediate area of need for water was covered very well.

Once again, I have to reiterate, there was a high degree of cooperation with all the city agencies.

Now, as far as what our agency is, or my department, we had a reorganization. With the budget problem of '88, my office was cut from six people to two of us, and that's what we have today. I see no change in that occurring. We are responsible essentially for coordinating the development of the Emergency Plan for San Francisco to ensure, number one, that there is an overview plan and parameters established so that the respective departments, in developing their operating procedures, work within the context of that — of those parameters and that overview plan.

So, I think, from the response of these departments, they had a pretty good idea what the general plan was and what their response elements of that plan was. Now, the emergency response plan — or departments did their thing.

The problem we experienced was those departments that are not really emergency response-oriented on a day-to-day basis, the Tax Collector, or the Controller, or the Civil Service, and these kinds of departments. And that's one area we're going to have to look in and try to heal up any cracks that have subsequently occurred. We haven't had the opportunity to do that at this point in time. It's going to take, I think, a considerable time to review that and do whatever is necessary.

Now, some of the problem areas that we encountered was the fact of inadequate space and physical layout of our emergency coordination center. It's split on two floors. It has limited capability, of about 25 people. And it has been recognized, that being the situation for some time, and in the bond issue that Chief Blackburn referred to, of '85 or '86, our office has some $3 million, and we're in the process of having plans developed for an addition, two-story addition, on the back side of that facility to — as a better coordination center.

The emergency coordination center location became ineffective, an ineffective element, early on, because the participants, once that initial contact was made and they started moving out, particularly into the Marina District area, closed down their operations, and therefore, the interface that was required by me to try to continue that coordination was cut off. And so, that became very difficult.

The public health people, there were about 200 to 300 injured. None of the hospitals went down. And I got the impression they were treating the whole thing as a situation normal, and therefore, they relocated out of the emergency coordination center and set up a separate command post at their Laguna Honda Hospital. Because of that, it was quite difficult to receive medical information.

The decentralized operation resulted in difficulties in obtaining disaster information and needs, which is a problem that we're going to have to recognize. And there has been mention about inadequate storage of fuel. We went out, and within 12 hours, we had more fuel than we've ever had in the City and County of San Francisco. At least, that was the comment made by the general manager of the Municipal Railway. So, we're — when they came into Municipal Railway, they filled their tanks, and then we were able to distribute some fuel to the other emergency agencies, although we did find that the City lacks a capability, a dispensing capability from a truck into vehicles or other equipment that need fuel.

We found that there's no effective organization in being at the present time to handle large numbers of media personnel who covered the event. This has been a recognized thing from day one, but it's something that we tried to make apparent to the City. We do not have a public information office in San Francisco. It's broken down, and different departments have their own PR person or public relations or public information. So, that became very, very difficult.

We also found that the City did not have any kind of arrangement to handle missing persons, persons that didn't necessarily go to a shelter to be registered, but just were not around anywhere. And I think, if we had had something, it could have gone out on the emergency broadcasting system, or the system that was used as announcements, or the Mayor made announcements over, and could have done something to have people report in.

And we didn't have any kind of centralized source of information for closure of streets in the City, other than we knew that the area down in the Marina had been cordoned off.

Some of the suggestions I might have — I know the Commission has focused on the unreinforced masonry building problem and Senate Bill 547 — but I finally got down into the Marina District last Thursday, and I noticed that in the Marina Distrist disaster area, that many buildings — there were many building failures, obviously, but they seemed to be large apartment complexes, say three and four stories high, with the ground floor all used for parking, and supported by wood columns.

And I might suggest that the Commission might well look into this kind of a building type, a specific type of structure, with the object of maybe sponsoring some kind of a study or legislation looking at that particular kind of building. I know there's others — you know, there's unreinforced masonry buildings, which we've all been looking at, the tilt-up types, and there's a lot out there. But this, being wood structures, I don't know if it really has been addressed. And there's been an awful lot of them down there. And as I go around the state, I think I find and see others of the same type.

Another thing that has been brought up, and that is that attention must be given to — directed to analyzing the utilities that service facilities in infirm or filled ground areas. The focus, I think, should be on the possible requirement for special kind of valving or connections, you know, going into the area, as well as connections in the distribution system going into facilities. And maybe even a study might be made to look at the requirements for automatic gas turn-off valves into buildings, you know, that are built in these infirm or filled areas.

The areas in San Francisco, I think, infirmwise, have been identified as those in the Marina, obviously, and those in the bay periphery. And we've got a new development on the board, so to speak — that's the Mission Bay area — and I've pointed up many times that that is old lagoon area that's being filled, but I think they're still pressing ahead to develop that, the dollar being what it is.

That's really the formalized comments I've got. If you have any questions, I'd entertain them at this time.

CHAIRMAN CLUFF: Thank you very much. I'm sure there are questions.

Before I open it for questions, if — Ed, if you want to set up the projector for the next speakers, go ahead and do that while we're asking questions, and then we can not lose any time with those projections.

Commissioners who would like to ask questions?

Dan?

COMMISSIONER EBERLE: Thank you.

Mr. Jenkins, you and Mr. Blackburn before you, to me, paint a kind of terrifying story on the lack of concern for emergency services in the City. I think you're to be commended for what you are capable — what you were capable of doing in responding to this, and it was a tremendous response.

But I hear things of the inadequacy of the emergency operations center, cutting your staff from six to two, lack of concern of the public officials for following up on requests for emergency preparedness. Am I getting a wrong picture, or is —

MR. JENKINS: No. I think you're painting a pretty good picture here.

I hope the picture is going to change, to a little degree. You know, San Francisco has been very, very fortunate. We have not experienced any disaster of this magnitude since 1906, and a lot of water has gone under the bridge, and a lot of people aren't around any longer, and our peers and contemporaries down in Southern California have experienced a number of these kinds of things recently. Now it's been brought to our attention. And I think that this attention span is — well, it's caught the attention of the politicians. And I hope that the attention span is going to be more than just the end of this month or the end of next month. And we may get a little bit more funding.

I've had some preliminary meetings. I have to be candid — at this point, I don't see our staff increasing. However, I think I may have some leverage with this incident to try to do something about it.

COMMISSIONER EBERLE: Well, I certainly hope so. It's not only San Francisco. I think that's all over California, and I certainly hope, if anything, this is a lesson to take this field much more seriously.

MR. JENKINS: And I hope that if we do, that my ulcer will go away.

CHAIRMAN CLUFF: We have other comments or questions from commissioners?

VICE-CHAIR RIORDAN: I have a question.

CHAIRMAN CLUFF: Yes, Barbara.

VICE-CHAIR RIORDAN: Just in following your emergency plan, does it set up the mayor as the chief for decision-making, and then where does it follow from there?

MR. JENKINS: Oh, okay. That is true. We use — I guess you could term — categorize it as an integrated emergency management system. Our administrative code establishes the mayor as the commander of the emergency services organization. That organization is the total organization of the City, not just my office. And to assist him, he has his department managers.

And that was the thrust, and is the thrust, of our plan, that he chairs that, and the chief administrative officer is his vice-commander, to assist him. Now, each of the departments, then, fit into a category in the plan, with specific responsibilities. And this plan follows the Multi-Functional Hazard Plan that has been adopted throughout the State of California, with different departments, police, fire, medical service, Red Cross, Department of Public Works, and in the resources element annex, which encompasses all the people like Department of Electricity, and the Controller, and Civil Service.

But the plan does, you know, form a pyramid with the mayor at the top, to command and head the policy decision-making aspect that would be required.

VICE-CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Yes. Tom, you had a question.

EXECUTIVE DIRECTOR TOBIN: Just a quick question.

Tom, did you have the ability to communicate by radio or phone with in Sacramento?

MR. JENKINS: By phone. Since the phones remained up, really, I felt that it would be better to use the phones as opposed to the radio, because many of these radios — you talk, and then it cuts off, and then it comes back on again. So, the phone was a lot better. And we eventually got a fax in our EOC — or ECC that also was of great assistance. But the telephone, we relied upon.

In addition to that, Cellular One brought in a — I don't know — I think about 200 telephones. And they were also given out to people as they moved around, because not all of our automobiles are equipped with radios or telephones. So, the Cellular One people brought in these phones and operated under our Department of Electricity Telecommunications Section. And they handled the distribution, based upon requests as received from our respective departments. It worked very well.

Whether they were donated, I don't know. They say they have a — my name for one of them, which I didn't sign for and I didn't use, so — but anyway, it worked outstandingly. The cooperation from the media, understanding from the population at large, and the — and the City agencies was just a tremendous thing to behold, really, and experience.

CHAIRMAN CLUFF: Commissioner Waste?

COMMISSIONER WASTE: Something occurs to me, after listening to several references now to the phone system and its overloading and the subsequent loss of communicative ability.

Does anybody know — and I don't see a representative from the telephone organization here — what about dedicated phone lines? Do they respond through the same system? And are dedicated phone lines a possibility to consider as a recommendation for certain key lines of communication that must be kept open?

CHAIRMAN CLUFF: Yeah. We have scheduled, for one of our other hearings, probably the one in Oakland, a representative from the telephone system to directly answer that question, and perhaps some of the following speakers that have dedicated lines, some of the very next following, could even address that question.

COMMISSIONER WASTE: Okay.

MR. JENKINS: We have some dedicated lines that emanate from our emergency coordination center, from — which is really the far dispatch center. And it radiates out into PG&E, police, and medical services. So, those worked, and our own METS system, which I referred, is almost dedicated too. Each location has a number assigned to it, and you just pick it up. You don't have to dial anything. An operator came on, "Give me 26," "Give me 19," or whatever, and it went right on through. So, essentially, the dedicated line, we have and utilize it very effectively.

CHAIRMAN CLUFF: Any further questions?

Stan?

COMMISSIONER SCOTT: Tom, just a quick question here. I was struck by your comment about the nonemergency agencies. You said there were problems, and that their performance needs review for the future. I gather that in this event, they sort of muddled through okay. But would you speculate, just momentarily, about how they might perform in, say, the much larger earthquake that we expect? And after all, that's really what we need to plan for. Would it be a real serious problem, the nonemergency ones, or just kind of a big nuisance?

MR. JENKINS: Well, Commissioner, these are the departments that get into the recovery side of the house. And I have to say, we have just finished our Emergency Response Plan. Now I'm beginning to get into the recovery side, the recovery plan. And so, I think they will have a much larger role and a better understand. But, I think, bottom line is the need for training and probably more exercises.

All our exercises in the past have been to the immediate incident — in other words, the fire or the police, medical service. And so, the other ancillary departments have not been written into it, really. They kind of support it. It's my intention that the next exercise we develop is going to be one where we're going to assume certain things, that the incident emergency response has occurred, now we're into the recovery, and bring in these other people so they have a better understanding of their potential need and role.

CHAIRMAN CLUFF: Dan, one last question.

COMMISSIONER EBERLE: Tom, could you say a few things about the coordination that you had with the state OES, and also with other counties and cities, if there were problems or it worked well, what?

MR. JENKINS: I can't say we had problems of not getting anything. My channel was to Region 2, in Pleasant Hill, and we had excellent telephone communications. They were able to expand the number of telephone lines over there. So, our department requirements for resources were quickly — as soon as we learned of them, were quickly funneled into that — into that channel.

I don't know, beyond that point, into Sacramento, although I did have a few conversations with people, but I always try to, you know, make the point that Region 2 was our point of contact. I did have a number of conversations with some legislators or assistants out of Sacramento, trying to give us help. But, you know, when they think of the San Francisco Bay Area region, they think of San Francisco.

And I might cite one thing, and that has to do with the ferryboats that were brought in. And I had a conversation with the aide of Milton Marks, and he was talking to me, "What was San Francisco going to do with all these ferryboats?" And I said, "No, this isn't San Francisco; this is a regional problem," and I referred to OES Sacramento and OES Region 2. They're the ones that appropriately should address the situation, and I think they did.

But I didn't work with FEMA. That's out of my channel. I work strictly within the state.

As far as interfacing with the other counties, I was too busy, they were busy. I did have — talk to Kent Paxton once, from San Mateo County, and he asked how was it going, and I kind of chuckled and made some kind of remark about it, and he says, "I understand," and that was it.

And then I had — my assistant had conversation with the disaster — or my counterpart from Sonoma County, and he provided some assistance to us, because we really were overwhelmed.

CHAIRMAN CLUFF: Tom, we need to move on.

MR. JENKINS: Right.

CHAIRMAN CLUFF: Thank you very much for coming over today.

MR. JENKINS: Thank you.

CHAIRMAN CLUFF: The next part of the program is, we've invited some speakers from PG&E. The first is Lyman Schaeffer, who is responsible for PG&E's Emergency Security and Preparedness Program.

And, Lyman.

MR. SCHAEFFER: Thank you, Lloyd.

First of all, my title is the director of corporate security for the company. One of my responsibilities is emergency planning, and actually, emergency planning coordination for the company.

And I would begin by making a comment that, as an electric and gas utility, we're used to dealing with emergencies. We do it every time there's a major storm, every time there's a major break in a gas transmission line. We have long-standing electric and gas operations plans. They get exercised four or five times a winter. Our people are very much used to responding to emergencies.

What we began to look at in about 1980 was really how we would respond to a very large-scale disaster, similar to the one we just went through. We are divided into six regions. What we anticipated is we might need some centralized coordination in the event of a disaster which impacted two or more of those regions, as, in fact, this did. It impacted our Mission Trail Region in San Jose, our East Bay Region, which covers Alameda and Contra Costa County, and, of course, our Golden Gate Region, which is San Francisco and San Mateo Counties. And our next speaker, John Ulrich, will speak to what we went through there.

What we did, beginning about 1985, is we put together a plan, which was very brief, and basically said that we would have a key group of officers and managers from our general office complex who would be part of an emergency team, who would establish a strategy and implement that strategy, based on the individual disaster. There was no attempt to micro-plan this down to individual gas mains. And that's just — you can't do that.

We also created an emergency operations center. And I'd like to show you what that looks like, and then also talk to you about how we prepared for this disaster specifically by running a drill, an earthquake drill, on June 2nd.

(The following remarks were accompanied
by a slide presentation.)

MR. SCHAEFFER: Our emergency operations center was ready to go at the end of 1987, beginning of 1988. We did not attempt to go into very expensive dedicated space. We basically have large conference rooms in our general office complex which can seat about 200, 250 people, that are routinely used for large meetings — in fact, they're being used tomorrow — our chairman of the board is having a discussion with employees about the earthquake.

But, in a space of about an hour, those conference rooms can be converted into an emergency operations center. And basically, you have Pac Bell and company telephone systems — we have our own phone system. The Pac Bell lines, we have about twenty dedicated Pac Bell lines, which are on a high-priority restoration level with the phone company. We also have satellite communications devices. We have two of those, which we acquired at a cost of about $130,000, which are in the complex, are available to use.

We tried cellular telephones in there in our drill on June 2nd, found they won't work, so we're going to probably make some modifications, and, hopefully, we'll be able to get those to work.

As you can see, there are computers in the background. These are basically tied into our regional management information system, also into our basic business system, which is teleprocessing, and our other systems.

So, those are the tools that we have.

Once — the way our EOC is structured, again, at our corporate level, is on two broad groups: first, our Policy Committee, which is made up at this time of about 15 to 16 officers. It is headed by our senior vice president of our Distribution Business Unit. He's basically the fellow that has all the people who go out and dig holes and put up lines and that sort of thing. They work for him. He provides the gas and electric service to our customers. They work with an Implementation Committee, which is headed by our vice president of Gas and Electric Technical Services, Bill Mazotti.

There are two support groups in there, support staff and security, security because, again, in an emergency, typically we're dealing with law enforcement and fire agencies fairly early on. And then, the support staff is basically clerical functions, such as answering phones, typing, that sort of thing.

The purpose of the Policy Committee, basically, is to make an assessment of what the overall disaster means, and develop a strategy from a corporate standpoint, how we would deal with that. And basically, it amounts to allocating resources to where the needs are greatest.

Once that strategy is developed, it is carried out, again, by our Implementation Committee, which, in addition to carrying out that strategy, also identifies policy issues. One major policy issue: will you allow employees to go home, for example. That's a major policy issue.

We ran an exercise on June 2nd because we had the team, we had the facility, and like every football coach knows, if you don't practice, you're not any good. We wanted to test a number of things. We wanted to know if the communications devices would work. Would the phones work? Would the teleprocessing equipment and that sort of thing work? We wanted to test staff-line relationships.

In this case, we used a scenario of a 7.0 earthquake along the Hayward Fault. We developed a scenario with our Geosciences Department, and we were able to go through in fairly — in fairly good detail, and look at what the impact of that would be on our operating system in the East Bay. And we centered it in Oakland and Berkeley. To some degree, we limited damage in our San Jose and San Francisco Region areas deliberately, because we didn't want to overload the staff that was going through this, really, for the first time.

We also wanted to see if we had the right mix of people in the room, knowing that we probably didn't. And again, that's something that an exercise tells you. Do you have the right people? How will they act under these kinds of situations?

This is a view of our actual exercise on June 2nd. We began — this is a view of our Policy Committee. One other thing we have along the wall in the back is our system maps, and also road maps. We basically gave an orientation, how the exercise would be conducted. And a gentleman that you may know gave us an orientation of what would happen in the event of the earthquake along the Hayward Fault, which was extremely beneficial to the people in the room, who had probably not been exposed to this, in many cases. And it really gave them some food for thought in terms of what this kind of an earthquake, which we knew was highly probable, would have on their operations.

We then began — we also used an outside consultant in this exercise, John Way, from Moraga.

This is a view of our Policy Committee during the exercise. Again, as you can see, there are computers in the background. We also have televisions sets in the EOC, along with VCR's so they can record newscasts.

This is a view of the Policy Committee in operation. This is about 15 to 16 of our general office managers, again, headed by Bill Mazotti, our vice president of Gas and Electric Technical Services.

Same basic configuration, but it's just on the other side, although people can walk back and forth between them.

This is a view of our support staff. In this case, we used clerical people to screen all incoming phone calls. What we found in the exercise was that this didn't work. It doesn't do to have nontechnical people taking technical information, and we did not use this during the actual emergency.

This is our security room, which is just off the main room itself.

This is a view of the exercise. It was run by our general manager, Distribution, Virgil Rose. To his left is our vice-chairman, Stan Skinner. So, virtually all of the officers assigned to this emergency team showed up for the exercise. So, we had very good commitment at our senior levels. This was also extremely helpful in the disaster, because Virgil was not in the complex. Stan was, and Stan was the one who made the decision to activate the EOC.

This is the view of our Implementation Committee, where by far most of the activity occurs. These, again, are our general office managers.

We attempted, in setting this up initially, to group people by like functions. In this case, we have our manager of power control, who's sitting next to our substation and transmission — excuse me — our substation manager, who is seated immediately to the right of our electric distribution manager. So, they're all seated right together so they can talk back and forth and there's good communications.

We also have good interplay between our Policy Committee and our Implementation Committee. This is our vice president in the foreground, standing, our vice president of Corporate Communications speaking to his news services representatives, so they're going back and forth. In the background, standing, is our manager of Customer Operations, who's talking our manager of Telecommunications about how he's going to get his customer service system back online.

This is a view of what we tried to accomplish, which was basically to force people to face the kinds of issues that they would in the event of an actual disaster. The questions and messages that were sent in to this exercise were developed by their own staffs, and also by our East Bay Region, which activated its EOC and worked out of that.

And we found — this is our manager of our Materials Department — and we found that our materials people are very active in these disasters.

And finally, we deliberately — as you can see, there's always a certain degree of confusion, people crossing phones and that sort of thing. And again, this is the kind of thing that you want to work out in a drill. And, in fact, we did.

And that's really the end of my slide presentation.

I think what we found as a result of that exercise was that we worked better in the actual emergency than we did in the drill. We took basically — probably a day to a day and a half's worth of events, compressed into about a three-hour period during the drill, and the result was that when this earthquake hit, people knew where they were supposed to go. They knew generally the kinds of issues they would be facing. And the teamwork had largely already been established. And to a man and woman, every person who was in that EOC during the emergency believed very firmly that that June 2nd exercise was enormously helpful in dealing with this.

Some of the major accomplishments of our emergency operations center at the corporate level during the emergency were, we were extremely able to easily and quickly get outside aides. About 400 gas service people were brought in to deal with the emergency, because one of the major problems was the gas relight problem. 250 of those people came from Southern California Gas, the others from as far away as Washington and Utah. Some of them were transported into the area on our corporate aircraft, again, coordinated out of our emergency operations center.

We were also able to acquire materials from as far away as Tennessee, from TVA, and also from the Department of Water and Power, and other utilities in California and the region, again, coordinated generally on a central basis.

We were also able to keep up to date and, I think, on a fairly accurate basis, of what the status of the system was and the what the problems we were facing. And that worked out very well in terms of providing information to the media.

The room that you saw with the telephone operators, we did not use that for the telephone operators because, again, we had found in our drill that that really became a bottleneck. That became our media room. And sometimes you're lucky, and sometimes you're good, and it's great when you're both. And in this particular case, our media people could not get into their offices because 77 Beale Street was initially closed for seismic inspection. So, they worked of this EOC. And what we found was that was extremely useful, because they had direct access to the operating people, they had direct access to the media, so they were able to information in a very timely and very accurate manner. And we found that that was extremely helpful.

It also provided a central coordination point or contact point for governmental agencies. We talked with FEMA and OES the morning of the earthquake, and a number of other agencies.

I think one of the other things that we found in this — in this actual emergency that were very good, was, one, our company telephone system never failed. And while we had sometimes trouble getting calls out, or people had trouble getting calls in, which is more likely the problem, people could call to our office, for example, in Sacramento, and we could get right through. That system really never failed.

We were also fortunate in that our computer center, which is in the basement of 77 Beale, has been through some seismic bracing, and that didn't fail.

Our back-up power control center in Fresno was put back on-line for a period of time, and that worked.

So, we feel, on the whole, some of the precautions that we took really did — were very helpful. And the biggest thing we found is that the drill was enormously helpful. I had already done an action plan for the second drill, which I sent to our general manager two hours before the earthquake. So, we're ready to do another on on April 27th.

And with that, I'll be happy to answer any questions.

CHAIRMAN CLUFF: Fine, if we could have one or two quick questions of Lyman.

And, Lyman, if you could stay while John Ulrich gives his talk too, and then we can open it for general discussion.

But anything specifically to the emergency response that Lyman has discussed? There are other PG&E questions that we'll address later.

I think you handled them very well, and we don't need to pass on any more accolades to PG&E, in that the papers and the television and all the marquees that we've seen in hotels acknowledging the good performance of PG&E and other utilities has certainly been outstanding. So —

MR. SCHAEFFER: Then I'd be happy to turn it over to John Ulrich.

CHAIRMAN CLUFF: John, come up.

John is manager of PG&E's — wherever you like, John — up there or down there, either one — PG&E's Golden Gate Region. He was directly involved in managing and making decisions with the event as it pursued in the response period.

So, John, if you could talk to us about your experience, what worked, what didn't work, and how we as a Commission can be helpful in developing initiatives at the state level, at different — at other state agencies that we have, that we are advisory to, to improve our response capability in future earthquake.

MR. ULRICH: Well, I'd be glad to.

Can you hear me all right? I'm working on a cold.

My name is John Ulrich, and I'm the division manager for PG&E in San Francisco, and my responsibilities are for operating the gas and electric system within the City and County of San Francisco. And that's a little over 420,000 customers. And the distribution system is both electric and gas. It's overhead and underground. And I primarily take the responsibility, once the transmission line reaches the City.

I'll talk in general terms first. I've got numbers and statistics to add to it, but I think if I tell you a little bit of what I did and what our people did, it will give you a flavor, and then you can ask me any questions you'd like.

And, by the way, if you do have more accolades for PG&E, I'm going back to see 400 employees right after this, and I'd be pleased to pass those along. So, don't feel intimidated about saying those things. But I am obviously biased and prejudiced about this, and will be glad to discuss it.

The time of the event is obvious at this point. Momentarily after the earthquake shook, we lost power to virtually everyone in the City and County of San Francisco and parts of San Mateo County. PG&E serves the City in two distinct ways. There are two power plants, which, in one sense, are unique, in that the power plants are located within the City, at Potrero and at Hunters Point. The seismic movement caused those power plants to trip off-line. At five o'clock is a peak period for providing electric energy to the City, under normal conditions. We had probably 800-plus megawatts of demand on the system.

Simultaneously, our San Mateo Substation, which is down in San Mateo, a little north of Foster City, we had major damage to a 230,000-volt switch located in the yard. so, our protective system, when that happens, as the frequency decreases, trips all of the — or turns off all of the circuits in the City.

That was probably one of the most fortunate things that occurred, in that we were able — when we were able to discover all of the problems, we were able to restore power in a very methodical and very planned and very deliberate manner, which I'll go into in a few minutes.

At almost the same time, our emergency plan, as Lyman points out, is virtually an everyday occurrence. It's not uncommon for a gas line to be broken in the City due to construction, somebody digging into it. It is not unusual for a power line to have some type of failure, by a car hitting a pole. In other words, emergencies are, frankly, an everyday occurrence. So, we have the unique fortune to be able to practice our emergency planning all the time.

My headquarters, my location, is located out on a 10-acre site that's located on Folsom Street, covers three city blocks. I have 900 employees whose sole job in life is to provide service to our customers. I have an emergency center, which is an electric -- divided into electric and also into gas.

The -- both centers were activated immediately because the personnel are located there. And the first plan when you have a shake like this is that you send your gas trouble people and your electric trouble people out into the field. You don't worry where it is at this point, because you don't know, and you send them to various parts of the city.

So, at the time that a fire was discovered in the Marina, we already had a gas service crew in the area, and we immediately started to shut off gas to the affected area. And as you can see from the news reports, there were only four homes -- I don't want to make that lightly -- but four dwellings in the Marina, in the way they're compacted, is a very fortunate set of circumstances, that all that was lost was four.

We cordoned off -- by communication with our emergency center, we were able to isolate the area. It required shutting off 14 valves in various locations, which we did very quickly. And the area of the Marina was turned off. And that is the area that we're presently working on to restore gas service, and I'll give you more details on that in a few minutes.

Simultaneously, we have an emergency center that's located out off of Geneva near the Cow Palace. I was at the -- at the third game of the World Series, and after the shake there, I knew we had problems, because I have people stationed outside of the -- one person outside of Candlestick Park on a game like that, because of the news media worldwide coverage, providing an alternate source of power. When I saw that the power did not come back on, which would have happened, I knew we had some problems.

The telephones, as you probably have already heard, did not work. I went out to my car, and, of course, a cellular phone doesn't work. I got the best news from the radio, went back to our emergency center -- I was there in probably fifteen minutes, which was not too far away -- and got an assessment of the situation.

I then went back to our other emergency center on Folsom Street, found out what the crews were doing, where we were going, and felt comfortable that we were progressing to try and restore power.

My next job is to then go from there down to the emergency center that the City has -- and you heard from Tom a few minutes ago. I couldn't get there easily, so I asked for police assistance, and they got a black-and-white for me, and I was down at the City's emergency center just a short time later, and then worked as we've been trained to do. We do this training once a year in April, so I knew everybody there, and we knew what to do. And my role was act as the communication of what the City's needs were back to PG&E so that we could get our people in the right location.

The primary problems that I found at that particular time was, one, the City needed an assessment of how bad the situation was electrically. I filled them in. I had an opportunity to talk to the mayor and a couple of supervisors, and, of course, the director of Public Works, and all the other agencies. After I gave them a rundown, I asked them to give me an assessment of what they needed, and I started to fill that information back.

One beneficial part is that the fire department is -- has had plenty of training. We work with them extensively on what to look for when they get to a fire, how to disconnect the gas, and so, most of our reports came through that -- through that avenue, through 911 and through communications with the fire dispatcher. So, we were able to get people to the right location.

We also made a very fundamental decision, which I alluded to a few minutes ago, and that was to restore power in a methodical way. And what we did, before we turned any power back on, with the exception of some power towards the southern part of the City, we called for assistance down in Southern California and Nevada, and had people on their way with equipment to assist us in measuring the gas leakage in the streets.

And we went out and leak-surveyed every street and every location before we restored power. And by doing that, we were able to either mend the gas leaks that we found, or make them otherwise safe. And we grade leaks based on how high the concentration of gas is that we measure, and the most significant leak is one we call a Grade 1 leak. And we found in our investigation, over the next 48 hours or so that it took to restore, about 57 of those type of leaks. And those leaks occurred -- we went into major buildings, into the basements, inside the building, particularly in high-rise buildings. If we couldn't get in, we didn't restore power. We disconnected the power out at the outside.

We found a number of buildings that had internal leaks due to the shake, and we also found, of course, some of our gas facilities had significant leaks. And it's obvious that very little, if any, damage was caused by following that action. And we were able to restore electricity in a very safe manner to the City and, of course, at the same time, identifying where those leaks were and being able to get crews out in the field to take care of them. Now, that resulted, of course, in a longer period of time to restore power.

The other fortunate thing was, the shake, while it did a lot of damage, did very little damage to our -- physically, to our electric overhead and underground electric lines. There was some slapping of wires together, but since the power was not connected, it did very little damage. We only had, I think, 14 cases of wires that had come down. And since they were de-energized, there was no damage to either people or, basically, to property.

We restored electric service, basically, starting from the south of the city and moving to the north. And with the exception of the Marina area and parts of North Beach and the downtown area, which had more -- most of the gas leaks, we had everything back in about 48 hours. I'm giving you that in just general numbers.

So, that was our restoration. As you all know, we still have a number of customers in the Marina that are out. It took us a little longer to restore electric service. We basically disconnected everything. We went from house to house and made sure the main switch was off. We talked to the people there, got some assessment of the damage of the building. The City, by that time, had designated a number of the buildings either safe or not safe, and, of course, we concentrated on those where people were living, and got power back in that sort of a planned way.

We also set up a command post out at the -- at the Marina -- it's still there, behind the Marina Middle School -- where we dispatched our people to do the work. If we couldn't get to the main switch, as many of these buildings are 60-plus years old, and the switches are either inside or in a nonaccessible location, we would disconnect the wire out at the street, and until we were sure it was okay. We then went back on a subsequent visit and re-established service. I think there's about 200 buildings or so there that still don't have power, electric power.

Also, at the same time, we got a better assessment of the gas, and decided that we would not restore gas service in the area because of concern that there was such a movement due to liquefaction that our gas pipes, which are primarily in that area cast iron, and they're in 25-foot sections with bell joints, flexible bell joints at each one, that there was probably some leakage at each of those, or many of those points.

And that's proven over the last week to be true. We made the decision to replace all of the gas facilities. We brought in -- as of this morning, we have about 400 people working just in the Marina, doing construction, putting in a new main, and installing new services, and also service people that are going ahead of the construction to find out if there's any leaks inside of the dwellings so that the homeowners have plenty of time to fix those leaks before we're ready to provide gas. And we're estimating, at this point, that gas'll be fully back to everybody that can accept it by the first weekend of December.

So, we've taken a very active direction to get this accomplished. It's 53,000-plus feet of main. Part of it is being installed. It was a low-pressure system, so we're able to install high-pressure -- higher pressure, 40-, 50-pound pressure, plastic polyethylene pipe inside of much of the -- much of the cast iron, so we have a conduit. Where it was too badly damaged, we've just gone and trenched with rock-wheel cutters. We've had excellent relationships with the City in moving the bureaucracy, in a sense, out of the way, and have -- we've worked very close together. It's helped to have our trailers and our communication right next to each other.

Dick Evans and myself, and others meet continuously on this to try and find ways to solve the problems.

And I'd be glad to go into some detail, if you're interested, in some of the neat ways we've got hot water back to some of the customers so they won't add electric hot water heating in the meantime and do some damage to our electric system.

We've learned a tremendous amount from this, and I would say there's a lot that could be given to other locations that have the -- be unfortunate to go through something like this.

But I'll stop at that point, and if there's any more, or numbers, or any details, I'll be glad to fill them in for you.

CHAIRMAN CLUFF: Lyman, why don't you come up to the table next to John? And let's open to the Commission questions to either Lyman or John with regard to the topics they covered.

Commissioner Iwan.

COMMISSIONER IWAN: You made reference in your comments to the fact that you had cut the gas off in the Marina area, quote, "very quickly." What was that time?

And then, as a follow-up to that, it's been suggested earlier in some testimony that it might be appropriate to have automatic shut-off valves that would isolate areas of known poor soil conditions, if there is a failure there.

And what's your reaction to that?

MR. ULRICH: Well, I'm not an expert in the design of appropriate type of gas distribution systems. I'll give you my personal opinions about them, and take them for -- in that perspective.

I think it's -- I think it's been beneficial to have the ability to have a human make a decision about turning the gas off. We've had -- I didn't mention the fact that we had -- I had to bring in over 300 people, from Oregon, Washington, Southern California, to relight 27,000 -- this is just in San Francisco -- 27,000 services, many of which, you know, with the exception of a relatively small number, didn't really require to be turned off.

Now, I would not actually want to do it any other way. I think people should shut their gas off if they're concerned about it. It only takes a few more days to get the gas back. But I think that our procedure of sending people immediately to the field, and virtually 24 hours a day, seven days a week, we have people in the field -- we don't send them home or close up on weekends -- that were able to get to a point. And we have a maintenance schedule on the valves.

We've learned a lot in the last few years. We have had problems four or five years ago, in the downtown area. We lubricate those valves, and we train people on where they're located.

Now, there may be a better way of doing it, but I do like the fact that we can make that kind of decision and we can isolate the area. But you've got to have training and you've got to have knowledgeable people to do it.

COMMISSIONER IWAN: And how long did that take from the event till the time you had shut off the gas for the Marina area?

MR. ULRICH: It took about half an hour, I would say. I didn't -- I asked the question. I didn't get the exact time.

I think that we, you know, do this quite a bit. And I'm having a hard time, personally, to remember what happened between -- you know, the specific times of things, over a two- or three-day period, because you're up all the time. But I can do some more research on that, if you'd like.

CHAIRMAN CLUFF: John, I had a question, before I ask for other commissioners.

I remember when I was driving, listening to my car radio, a few minutes after the earthquake, the three radio stations that I heard, and then when I got to the emergency center downtown, I was watching television, and for, I would say, the first two hours, all radio stations that I heard, and a couple of television stations, were announcing for everyone to turn their gas off. And it wasn't until maybe around six or seven o'clock, or even later, that PG&E was able to influence those decisions.

I hope someone is taking some action to educate those people not to give those kind of announcements.

MR. ULRICH: Well, we do a lot of public education, in a sense, but it's a -- you know, it's a two-way sword. I -- you know, I'd love to have some of the news media out to help us turn the gas back on, you know, all the -- you know, on the other hand, I guess I've got to say, since we didn't have any significant damage or injuries or, thank goodness, deaths related to this, I think it's only a function of money and time, and I -- you know, what do you put your time and -- value on time and money?

I'm sure I complained a little bit about having to have all those people out there, and our employees really worked extremely hard late at night to do it. But I don't think I'd have it any other way. I think people should make that decision. If they felt comfortable about turning the gas off, I've got to put it this way: it gave us an opportunity to go and see them face to face and see how they were doing.

CHAIRMAN CLUFF: Barbara had a point, then --

VICE-CHAIR RIORDAN: Well, I just wanted to follow up.

Actually, I was going to mention that, first of all, I'm very impressed, and always have been, with utilities, whether it be PG&E or Southern California Gas or whomever. I mean, they're wonderful to work with, on the part of local government, and we thank you for that.

I did observe, on the television at one time, two different reporters giving -- in the same room -- a different message on how to handle the gas turn-out. And I, like Lloyd, would hope that perhaps you might educate those announcers or other news types what you like to have done.

I understand clearly what you've said here, and it's perhaps the very best procedure to follow. If the person feels comfortable with leaving it on, fine. If they don't, they'd better turn it off.

MR. ULRICH: Right.

VICE-CHAIR RIORDAN: But it was interesting. One reporter gave -- and then the other one immediately said, "No, I think there's another way to do it." Obviously, he'd been educated a little bit differently. So, it was kind of interesting to watch.

MR. ULRICH: Well, I think -- I think you're absolutely right, if you're suggesting that we need to keep up the communication and the education.

But let me just say one -- I guess, one thing. Again, this is a personal one. I've worked in a lot of areas of PG&E, from -- typically, PG&E doesn't trust managers unless they work out in rural areas and see how well they do, before they come into the big city -- I'm joking a little bit. But I've worked all over California.

And I think the way you handle a problem in a rural area, where you're maybe the only house within a few feet of each other, is one thing, because you know that the gas is -- the odor is emanating from somewhere in your house. But it's a far different issue, I think, in a place like the Marina, or in parts of San Francisco, which is a totally different environment. You can't tell where that gas is coming from, if it's from your house or your neighbor's house or the person behind you, or, in condominium complexes, you don't know where -- I mean, there are four or five stories, and each person owns a different unit, and you go in the back and there's 35, 40, 100 meters.

So, I can't -- while I would love to have everybody know exactly where that gas is coming from and only turn off what they know is leaking, I'd rather have them go a little bit further, particularly in San

Francisco, where I'm responsible for it. And I'll be glad to go out and relight those.

CHAIRMAN CLUFF: Yes. Commissioner Peak, we haven't heard from you today.

COMMISSIONER PEAK: It sounds to me like there was considerable advantage, in some cases, in both electricity and gas being handled by one organization.

MR. ULRICH: You bet.

COMMISSIONER PEAK: Would you care to comment on this further, as to what would happen, say, in a city like Los Angeles, which has one operator handling gas and one handling electricity, and you want to turn off the electricity in one building because you think there might be a gas leak, that type of thing?

MR. ULRICH: Well, I'm not -- I guess I really don't feel able to comment down there. I know -- I know how well it works here, because we have people that are trained to do both, in the sense I have an option of being able, if I have a need, to send a person who is basically electric-oriented. We give them enough training to be able to do a lot of things in the gas area, and vice versa. So, I wouldn't have it any other way.

I've been in areas up north where the utility, parts of the utility -- you know, being specific, the City of Redding, where the electricity is run by the city and the surrounding part is PG&E, and I've been the manager there. And it is -- it is more difficult, because it just involves more communication and different ways of doing things. I couldn't tell the city how to do things. I could suggest it, and vice versa.

But it also worked there because we sat down and talked a lot. You've got to have communication, communication, communication. And if people change, almost weekly there's somebody new, you've got to go back and keep doing it.

So, I would only say it's a function -- if you've got multiple agencies working, you've got to have more communication. And I -- I think that's why -- my prejudice in this area is that San Francisco, I'm dealing with one city, one city government. Some of my counterparts are dealing with five, six, eight, and ten cities, and that just makes it a little more difficult, or another way of looking at it, more of a challenge to communicate well.

That would be my comment.

CHAIRMAN CLUFF: Commissioner Waste?

COMMISSIONER WASTE: I have a comment that refers both to my status as a commissioner and to the fact that I was a resident of that area, and looked down on what was the greatest light show in town that night, something I'd not like to repeat.

But I do have an observation about the traffic flow in the area. The minute the lights went out along with the power system, you could see the effect on the traffic flow, trying to go home, trying to work its way into the area, with no stop lights working. I guess my question is, is it practical to consider a separate system to work the traffic light system within the city? Because, as that went out, every corner became a potential problem.

MR. ULRICH: Well, having experienced that just like you did, I would have hoped that the lights would have worked. I do have a little bit different opinion, is that I was amazed, I was pleased and impressed with the way people acted. I, in all my movements around, I didn't find anybody that tried to hog in front of me or do something. I thought people were far more polite and more willing to do things, and they stopped at every intersection. I didn't have anybody running through it. I mean, it was -- you'd stop, somebody would wave you -- wave you on. And this was at two, three, four o'clock in the morning.

But I know I did -- along Army Street, particularly, there was a lot of traffic that would have been improved by having lights that worked. It would probably be a very good idea, if there was some way of having a battery, some type of a source there that -- at key intersections, that, while the power was normally on, would keep those batteries charged, and then be able to work for four or five hours or so, at least, after the power went out. That would be, you know, a great idea.

CHAIRMAN CLUFF: Yes, Commissioner Kockelman.

COMMISSIONER KOCKELMAN: Two quick questions. I think you testified two generating plants went out, and one switch went over. Do you have any plans for hardening those up, or did they perform as you had expected and you'd like to see perform in the future?

MR. ULRICH: Well, I would never like to have the power in the city go out again. But because of the nature of this, I think -- I think the way that it failed, in the good sense that it went out, if it had not done it that way, there could have been far more damage to those power plants, by trying to maintain -- trying to pick up the load and supply the energy, and it may have been weeks or months or years before those power plants could have come back on.

So, I think that the way it worked was okay in this kind of situation.

COMMISSIONER KOCKELMAN: So, you have no plans to redesign them or change them or set the settings at a different level or anything?

MR. ULRICH: Well, I think that ought to be -- I think somebody should think of that. As the -- as the provider of energy here, I'm going to sure look a lot more. I think we can always learn from this. I mean, this was --

COMMISSIONER KOCKELMAN: A second question. I notice in the Marina, you're trenching and putting the gas mains back in. Is that correct?

MR. ULRICH: Yes.

COMMISSIONER KOCKELMAN: Yeah. Do you expect them to break again if you have an equal or larger quake in the Marina? Will the liquefaction problem and the other soil failures cause the same kind of breaks in the future?

MR. ULRICH: Well, this is basically a polyethylene material. And if you've seen it, it's a very heavy wall. It's almost deceiving, when you look at the outside. It's not -- using plastic kind of sounds almost like it's a Mattel kind of toy, and it's just the opposite. It's an extremely tough material. But it can be -- I'm sure it can be broken. It has only so much elasticity.

But, from my knowledge of liquefaction, when that occurs, it's going to be -- that area where liquefaction occurs, this pipe is going to be suspended. It's either going to rise or fall or move horizontally in some way. It's going to work much, much better than the rigid type of pipe that it's replacing. Whether that's the ultimate, I --probably not, but it's the best we have. We know the technology. I'm not aware of any other part of the City that we had -- or anywhere in the PG&E system, and we have thousands of miles of plastic -- where that plastic ruptured.

Now, I didn't go out and ask those, you know, specific questions, but I'm not aware of any problem with it. So, it's a lot better than what we've got.

COMMISSIONER KOCKELMAN: Thank you.

MR. ULRICH: Does that help?

COMMISSIONER KOCKELMAN: Yeah. Thank you.

CHAIRMAN CLUFF: Any further questions?

Yes, Randy.

COMMISSIONER PESTOR: Yeah. PG&E was really helpful this year in lobbying for our water heater bill, requiring those to be strapped and having warning labels on them. And I was just curious whether or not you've been keeping records on how many water heaters have tipped over in this event. And if they did, were there any problems with leaking gas or any fires from those?

MR. ULRICH: That's an excellent question. I'm not aware of any. But I didn't -- I wasn't perceptive enough to ask that question.

I know that Title 24, in particular, requires that. I can tell you the proactive approach that we're taking is that we have, through the Public Utilities Commission of California, we have conservation programs. And one of those is a low-cost and also a residential weatherization program. And we've recently changed our requirements, and as part of the contract, when we're out weatherizing and insulating, we also make sure that the water heaters are strapped.

So, there's an additional group of people that are getting that kind of service. And -- but I would assume that there's still probably a good percentage of homes that don't have them strapped. And I would say that's probably an extremely useful thing to do.

COMMISSIONER PESTOR: Yeah. And on this bill, it would be all replacement water heaters too. So, as they start being replaced now, they -- and they'll have warning labels, and it'll be in the instructions, and there's penalties and things like that. So -- but that sounds great, that you're doing that on your weatherization program. That's wonderful.

CHAIRMAN CLUFF: Dan, did you have -

COMMISSIONER EBERLE: No. I had the same question.

CHAIRMAN CLUFF: Okay, fine.

Any further questions of PG&E?

(No response)

CHAIRMAN CLUFF: Well, again, thank you very much, Lyman and John. And we appreciate your taking the time out of a very busy schedule, and for the wonderful job you and your staffs did in responding to this event.

MR. ULRICH: Thank you. You might drive back through the Marina and take a look at all the work that's being done.

CHAIRMAN CLUFF: Thank you.

The next speaker is Don Mohn, of the Golden Gate Bridge.

And I just want to say that we are running about a half-hour behind schedule right now. We apologize to the future speakers, but I think, given the flexibility with everyone and the difficulty we've had, we're amazingly on time.

So, please be as brief as you can, but give us the information that we're here to discuss. And we welcome you to this meeting.

MR. MOHN: Yes. Thank you, commissioners.

The Golden Gate Bridge District is responsible for the operation and maintenance of the Golden Gate Bridge itself. In addition, we have the Golden Gate ferry system and the Golden Gate bus system. And as chief engineer of the District, I'm responsible for the engineering of that system.

Now, as -- on the Tuesday evening of the quake, through very careful planning and long-range forecasting on the part of myself and my deputy, Merv Giacomini, we positioned ourselves to be in the middle of the Golden Gate Bridge traveling north in the seismic event. So, we could start our inspection of the bridge at the beginning of the seismic event --

COMMISSIONER BOLT: You have a predictive capability?

MR. MOHN: Well, fortunately, it happened that way. I'm not sure that we'll be so lucky when the next big one comes.

But, because of the fortunate circumstances of us being there, we were able, then, to not close the Golden Gate Bridge, because it wasn't damaged. But we were able to determine that very, very quickly.

I brought some slides down, and I'd like to go through just about six of them, very quickly, with you, to show some of the seismic retrofit that we did to the Golden Gate Bridge in 1980, between 1980 and 1982, following the promulgation of new bridge standards after the 1971 Southern California earthquake.

(The following remarks were accompanied

by a slide presentation.)

MR. MOHN: The high viaducts that are part of the Golden Gate Bridge and connect the suspension bridge to the Marin and the San Francisco shorelines are the most vulnerable part of the Golden Gate Bridge, being rigid structures. They were originally designed to the seismic codes of 1929, which were very limited in knowledge of seismic action, particularly the ground accelerations.

Following the redesign or the retrofit design codes that came out after the 1971 Sylmar earthquake, we went through the Golden Gate Bridge completely, this high viaduct -- the suspension bridge too, but we didn't have to do any modification to the suspension bridge -- and added a considerable amount of strengthening to the high viaduct.

As you can see in this picture, we tied the footings together with very strong grade beams. Because the footings are not on equal elevations, these grade beams stand out as being kind of dogleg in shape.

At the expansion joints, we installed these 2-inch-diameter high-tensile steel rods to eliminate the travel of the expansion joints so the joints wouldn't pull apart during a seismic event and cause the kind of problem that was so noticeable in some of the Southern California bridges, where the expansion joints actually pulled apart and dropped the structure.

We did lateral support between the substructure and the superstructure at the top of the towers as well, so that the -- in case the seismic event was from the lateral, rather than longitudinal direction, we would have a good tie in that direction as well.

At the base of the towers, we found that the original anchor bolts were inadequate, and there was insufficient stiffening. So we added additional stiffening to the base of the towers and we put column ties around the base of the columns and anchored them into enlarged footings, so that we would be able to transfer the seismic stress through new anchor bolts, anchor arrangements, rather than the original ones, which were inadequate.

That was the main portion of the work that we did to the bridge in preparation for the earthquake.

Following the earthquake, since we were right on the bridge and could make an inspection of those particular points, on both the north and the south end, and within fifteen minutes we were pretty well -- we had pretty good knowledge that the bridge was not damaged in any way and did not -- would not have to be shut down to traffic while a more thorough inspection was being made.

We -- as far as our bus and our ferry systems are concerned, we have our own emergency generator systems at all of our facilities, so when the power went out in San Francisco, at the bridge itself, the generator came on and kept the bridge lighted, for traffic safety as well as the ease of inspection and keeping our operations going.

Our San Francisco ferry facility, the emergency generator was not able to be brought on-line because we had a short in the system due to the seismic event, and it took some time during the next day before we had power back at that place. But we had an alternative area that we could dock and load our ferryboats, down on Pier 1 and behind the Avis car rental agency. So, we were able to continue operation of our ferries between San Francisco and Marin County. And at Larkspur we didn't lose power.

Our bus system was able to continue operating, although we had to change mode a little bit because the city became congested. We turned our San Francisco buses that were in the city into ferry feeder buses, rather than trying to get the -- run the routes down through Lombard and the Marina, which was completely closed. The buses that remained in the county, then, were ferry feeder buses off of the Larkspur end and the Sausalito end of the ferry system.

We have dual-loop microwave communication between all of our facilities, so we're able to maintain communication all during the seismic event. We were very fortunate in that we were able to stay in service throughout the seismic event and in the days following the event, to the best of our abilities.

If commissioners have any questions concerning our operation, I'd be very pleased to try and respond.

CHAIRMAN CLUFF: Thank you very much. We want to congratulate you for taking these extra efforts and upgrading the bridge. And I'm sure that played an important role in having that bridge operational after this earthquake.

Commissioner Iwan had a --

COMMISSIONER IWAN: Yes. Well, we've heard a lot about the lessons we've learned from different aspects of the earthquake. And, of course, when we look at structures, we can learn an awful lot about the way a structure performs. And in this case, it seemed to perform very well.

But it's very helpful if we can document that with instrumental information. And if I recall correctly -- and please correct me if I'm wrong -- I remember, back in 1985, I think, that you were talking about actually instrumenting the bridge so we could recover some information on its behavior in an earthquake. What ever happened to the program to instrument the bridge? Was it instrumented? Did you get records? If not, why not?

MR. MOHN: That's an excellent question, and I'm glad that you asked that. That was number one on my list of things to mention.

We do have the system designed, but not completely installed. It's -- we have the hard wiring installed, most of the instrumentation points. However, we're short about $385,000 that -- we call it deferring it from one budget year to another, and we've deferred it about three budget years in a row now, due to higher priority calls on the limitied funds that the bridge district has.

I'm sure going to be lobbying very, very hard this coming budget year. We start preparing our budget in January, and I would certainly appreciate any help and assistance and letters to the district, or whatever you people can do, to help me convince my board of directors that seismic instrumentation should be a high-priority item, because I'm not sure that I can time the next -- myself to be at the right place for the next quake, and I might, and my whole staff might be scattered out all over the Bay Area, and we have a bridge with not enough damage to make it obvious to our operational person or the persons that are there 24 hours day that it should be closed, but enough damage that it should be closed because of -- aftershocks may cause a failure.

If we had such a system that we could access through home computers as well as computers right at the bridge, I think that in case the bridge was damaged, we could certainly isolate the area of damage much quicker and get the bridge into operation much faster. And communication links, transportation links are very, very important at times like this. We all know that.

COMMISSIONER PEAK: Is that --

COMMISSIONER IWAN: Thank you.

COMMISSIONER PEAK: Pardon me.

CHAIRMAN CLUFF: Yes, go ahead.

COMMISSIONER PEAK: Is that plan that you have for instrumentation the same one that was submitted to the state for comment? There was one submitted, I think about -- well, you appeared before the Lifeline Subcommittee, the Strong Motion Program -- this was back about '82, I believe.

MR. MOHN: That's correct.

COMMISSIONER PEAK: And then you submitted a plan, which we commented on, back to you. Is that the same basic plan that you're using?

MR. MOHN: The basic criteria remains the same. The actual instrumentation has been somewhat modified to be more off-the-shelf items and much simpler to operate and diagnose.

CHAIRMAN CLUFF: Commissioner Bolt?

COMMISSIONER BOLT: Mr. Mohn, is it a fact that the bridge district intends to have a structural study made of the bridge? Is there something on the books about that at the present time?

MR. MOHN: Before the seismic event, we had commissioned a study, which is now ongoing, to determine the feasibility of rail transit operating on the Golden Gate Bridge. And I'm sure that what we've experienced in this seismic event will be very interesting to our consultant engineer, T.Y. Lin, who's doing the study.

COMMISSIONER BOLT: Yes.

MR. MOHN: We are also calling for -- requesting proposals, and we have a short list now of engineering firms to do a major inspection of the Golden Gate Bridge -- again, unrelated to the seismic event, but because of the seismic event, we'll restructure that study a little bit, just to make sure that everything that can be done to the bridge to harden it has been done.

CHAIRMAN CLUFF: If I could follow up on the two commissioners, Iwan and Bolt, I think, to help you assess the viability of the other -- adding additional systems to the bridge, the instrumentation that Commissioner Iwan asked about would certainly have been very helpful. And it re-emphasizes to your board of directors the importance of that.

And we would hope that, even though this event is now past, certainly we will have additional events, we hope not in the near future, but we know we will have. And so, as soon as you can get that instrumentation system in, the better off. We'll know how bridges respond. It's extremely important.

Other questions?

(No response)

CHAIRMAN CLUFF: Thank you very much.

MR. MOHN: Thank you for the opportunity to appear.

The next speaker will be Art Curtis, from the San Francisco Municipal Railway.

MR. WRIGHT: Mr. Chairman, I'm Guy Wright, with San Francisco Muni. I will address part of the Muni area. Chief Inspector Curtis will follow me in just a few minutes.

I want to address the preparation. I'm the director of systems safety at Muni. Just basically, looking at what Muni has evaluated in the past and what we have done with the various learning we had done.

One of the first orientations we've been trying to put into effect at Muni is to get our individual employees to develop a family plan -- this is not Muni -- this is their personal life -- so that when something of this nature happens, that they and their families know what to do, have appropriate supplies, know how to communicate, have money for phones, and have a communications center outside the Bay Area.

Now, this is something -- unfortunately, we've developed a brochure, which was not published at the time, but is now receiving additional emphasis on that. Muni has, over the years, worked very closely with the Office of Emergency Services in San Francisco. We participate in the annual city drill for the ECC operations.

Muni holds, each year, at least four individual interagency emergency exercises, plus numerous tabletop type of exercises. We have various ongoing training in our emergency preparedness, our emergency procedures. We also, in several of our critical areas, in our metro area, we have recurrent training now in effect, and we are putting a recurrent training program into effect for our central control.

In preparedness, one of the things we do try to look at very closely is the facility design, the structural strength, the emergency power. We're looking very closely at several things in the geotechnical aspects right now, in future designs that we're looking at, the extension of the metro system.

One of our ongoing debates at Muni right now is how much electrical equipment should we have versus how much diesel type of equipment, because, when the power goes out, the electrical equipment, the cablecars and streetcars, the electric buses don't move. Right now, in terms of vehicles, we're 51 percent motor coach. In terms of mileage, it's 70 percent of our service. There's another result there that we'll discuss in a minute. The electrical is much cleaner for the everyday environmental type influence.

When we do have the emergency, the things that we plan on is the assessment, and the following is not necessarily in a prioritized order. There are several things that go on immediately. One, at our facilities, our people get out and immediately look for damage, structural integrity. Does the power work? If not, is the emergency power on? Our crews get out with our fuel levels. How much do we have in the way of fuel? How much do we have in the way of lubricants?

Center control is looking at our traction power. Do we -- are we able to provide service on streetcars, trolley buses, cablecars? In the subway in this case, which was dark, we established the evacuation, get the people out, where we had no traction power and we had no lights. You don't know what dark is until you've been in that environment. We were able to evacuate the subway safely. There were no injuries. We did have 15 people trapped in our Forest Hill Station elevator. We could not get any help on that. Fortunately, our engineers were able to get them out in about 30 minutes on that.

The other area that we seek to look at is our route availability, whether it's electrical, buildings, fires, or what have you, what we can do on that. One of the things we have adopted at Muni is -- well, what I call a quick and dirty reference card. We have them actually color-coded for the three basic areas of Muni, which -- this is for your management people. It gives the basic duty of the head of that area. It provides the chain of command throughout all three departments in an emergency, their first duty station, if that doesn't exist or they can't get to it, a second and a third alternative, orientated down toward the third level -- we're all focused at the diesel level.

It provides information on all our facilities and capabilities, the equipment, et cetera, the resources available to us, on the back, PG&E numbers, Pac Bell numbers, other transit properties, the California Truckers Group, et cetera. I've given you a copy of that.

I've also provided you with a copy of our first two days after the earthquake, the evaluation of what we did in the way of service, and our facilities inspection data.

Now, Chief Inspector Curtis will give you information on the effects and the restoration.

MR. CURTIS: I'm Art Curtis, chief inspector for Muni.

As you can see from my uniform, this has nothing to do with inspecting buildings or such things. I oversee the day-to-day operation of the Muni through my deputy chiefs, assistant chiefs, and a uniformed staff of inspectors and central control radio room dispatchers. The inspectors are assigned throughout the city, both in fixed locations where a lot of lines run by, and also in mobile radio car districts. So, we have a pretty good handle on things when something pops.

From an operational perspective, when the quake struck, we faced total loss of electrical power to all our trolley coaches, streetcars, LRV's, and cablecars. Being in the middle of rush hour, to give you an idea how that hurt us, we had 261 electric trolley buses, 104 streetcars -- some of them were in the subway -- and 24 cablecars on the road. So, they all stopped, just like that.

That wasn't entirely unexpected, but we thought we might save power in some areas. But your PG&E representative already explained what happened there.

That left us with 504 motor coaches that were in the street at the time. They took the brunt of getting people home. We had to take about 40 percent of them off their lines and put them onto the lines that were down because of power. And ultimately, we did get most people where they needed to go.

To expedite the loading, we cancelled fare collection, let everybody ride free. That helped to expedite moving people around. Operators on stranded vehicles were told to remain with their vehicles until further notice. Sometimes that was up to eight or ten hours before we got them into the barn. Subway operators evacuated passengers without incident. And, as Mr. Wright said, it's dark down there.

Our central control remained on-line with emergency power, auxiliary power, at least as far as the radio system was concerned. We obviously had no telephone capability at all.

Our other major problem was the fact that there were 62,000 people out at Candlestick, and we had carried, on the Muni, 9,000 of them out to the ballpark. So, we had to scramble to get the buses back at the last minute. And it took us about three hours to get the people out of Candlestick and to where they needed to go.

Now, while this was going on, of course, checks were being made of subway, the trackways, our overhead wires for the streetcars and trolley coaches, of which there's miles and miles and miles of them throughout the city, and also the physical plant and property. It interesting to note that Muni suffered no significant damage to plant or property. The only building that is marginal is the old Geneva car house, built in 1896, out at Geneva and San Jose, by City College. I've always been told that it was condemned in 1907, after the 1906 earthquake, but nobody bothered to tear it down, and we've been using it ever since. In fact, that's where I started out as a streetcar motorman in '61. Other than that, we did pretty well in facilities.

Recoverywise, by eleven p.m. on the day of the quake, power was restored by PG&E to several of our substations, allowing us to get the streetcars out of the subway and eventually get all the trolley buses into the barn. We converted the all-night service to -- the electric lines to motor coaches so the people could still get around.

And as a matter of fact, by the start of the a.m. peak on Wednesday, you know -- you know, thirteen, fourteen hours after the quake, all of our trolley coach lines were in operation, because PG&E had gotten us power back. The only place we could not operate was in the Marina District.

The subway was usable, because we had what we call traction power. But because of the failures in the downtown and the northeast part of the city, which didn't come back for a while, we were not able to have lights in our stations or lights for the signals. So, we had a limited operation in the subway, east as far as Van Ness Avenue, but we were able to get people at least that far downtown.

The cablecar system was ready to operate the next morning, but, again, because of no traffic signals in the downtown, we didn't feel it was safe to operate them. The cablecars, when they come downtown down hills, they have pre-empt devices that trip the traffic signals to green for them. And with no traffic signals, we didn't feel we wanted to take the chance. So, they did not get back into operation until late Thursday afternoon.

In terms of service to the public, on the a.m. peak on Wednesday, as I say, about twelve, fourteen hours after the quake, we had 65 percent of our service in the street and running. And that proved to be quite adequate, because a lot of people weren't going to work. On the p.m. peak on Wednesday, we had 75 percent of our service out. On the a.m. peak on Thursday, we were at 92 percent of service, and the p.m. peak on Thursday, we were at 95 percent of service. So, we recovered fairly rapidly in terms of getting the driver back in, and getting the equipment on the road, and being able to return to some amount of normal operation.

Of course, after that quake struck, our major concerns were the quick restoration of the power system, which did, for us, luckily, happen within a few hours; the availability of diesel fuel; and the condition, as I mentioned, of plant and property. We use 14,000 gallons of diesel fuel a day for our motor coach operation for a weekday. And by Thursday, we had 157,000 gallons on board at our various divisions, so that if there were aftershocks which knocked out the electrical system, we were in pretty good shape to supplement with diesels on the electric lines.

It's interesting to note that throughout this whole operation, you know, from the day that -- the moment of the quake, all the way through, there were no reports of any injuries to any of our passengers or to any of our employees. So, that -- that was really good for us.

Currently, we're providing about 100 percent of our service. We're also providing shuttle services to the Red Cross to take people -- you know, the homeless people to the showers here in the Presidio, to disaster application centers, and any other city agency that needs help is being provided with shuttle coaches.

So, we feel that, overall, Muni lucked out, number one. And number two, the preparations that we have made have helped us to recover very rapidly. And as I say, we're back up to about 100 percent now.

Thank you.

CHAIRMAN CLUFF: Fine, thank you.

I presume that both of you are available for questions from the Commission?

MR. CURTIS: Yes, correct.

CHAIRMAN CLUFF: Yes. I'd like to start out by complimenting you again. And as we know, with your underground facilities, underground facilities always perform much better than above-ground facilities, unless they're in areas of the fault slips or liquefaction. And, of course, you were fortunate in that your facilities that are in places like that recognize that condition and have been properly designed to accommodate those effects. So, it's a testimony to understanding the local geologic and seismic events, and then making sure that you're well prepared to do it.

But I don't want you to let down your guard, thinking this was a true test. We know that we're going to get closer and even larger earthquakes. And so, please continue your diligent efforts to think about even worse scenarios, so that we will have these vital services when we need them.

MR. CURTIS: We feel that, if it had been a larger quake, that we would have had much more trouble with our overhead power system. As it was, none of the overhead lines on any of our trolley coach lines fell to the ground at all. We had no damage at all. But, obviously, an 8.0 would probably take care of that for us.

CHAIRMAN CLUFF: Questions from other commissioners?

Yes, Bill.

COMMISSIONER WASTE: An interesting point has been raised, I think, in that your system is a dual power source system, that is, you've got an electrical system and you've got a diesel-powered system. Most communities, to my recollection, are single power source systems. Maybe San Francisco is fortunate in this respect, but there's a question, I think, that maybe we should consider, from a recommendation standpoint. Which way do you go? You've got the environmentally clean system on one side, but when you get into our kind of problem, it's liable to go down. Then do you have the back-up from the other kind of a system?

This is -- it's a problem, and I cannot resolve it. And probably we can't resolve it here today either, but I think it's worthy of some note.

CHAIRMAN CLUFF: You wanted to say something?

MR. WRIGHT: Yes. We have done research on that on Muni. We have looked at kinetic energy wells, we have looked at battery back-up systems, we have looked at auxiliary power units on our coaches. So far, we do not have anything that is totally satisfactory at this time.

CHAIRMAN CLUFF: Further questions from the Commission?

(No response)

CHAIRMAN CLUFF: Well, thank you very much for taking time from your busy schedules to come and give us this information.

MR. CURTIS: Thank you.

MR. WRIGHT: Thank you.

CHAIRMAN CLUFF: The next speaker is Peggy Emery, who is here representing the California Association of Rescue Dogs.

MS. EMERY: Thank you for the opportunity to address you.

CARDA, or the California Rescue Dog Association, is a mutual aid resource under the State Office of Emergency Services. We are a statewide organization of volunteer search dog handlers, and function as a very specialized resource, trained specifically for the search function in disaster, wilderness, avalanche, or criminal evidence situations.

Our dogs do not replace other specially trained dogs, such as those used for police work or drug detection, and our dogs are not cross-trained for those purposes.

We have worked in major incidents in the past, and 13 of us from CARDA responded to Mexico City in 1985 after the earthquake there, and spent nearly a week on site working as a search function in that situation. Our teams that are prepared for area search, including wilderness and disaster, mostly have some very specific disaster training, as follows.

This includes area search techniques specific to destroyed buildings and rubble, it includes safety considerations that are critical when working around a downed building or a dangerous rubble situation. It includes extensive agility and rubble work. The dogs must learn to move very slowly and carefully across unstable surfaces and across areas that are filled with nails and glass and rebar, without getting them injured. Our handlers also learn specialty techniques for accessing various areas in a destroyed building. And perhaps most important, the dogs are trained to alert or indicate when they've made a find.

The air scent dogs are trained to find any human scent in a given area. We have additional dogs that are trained specifically for scent discrimination or trailing, but they are not usually the ones responding in a disaster situation.

The dogs are trained not only for finding a live scent or live persons, but they have specific training with disaster -- with cadaver scent as well. We found that to be very important for some of our work.

We have found that dogs are able to tell us the difference between a live find and a dead body. And that, of course, is extremely critical, because rescue resources are most importantly detected or deployed to an area that has a live person trapped.

The dog teams are deployed through the State Office of Emergency Services to our own dispatcher, who lives in the Sacramento area. The CARDA personnel that make up a disaster response team include overhead support for agency liaison and communications work, dog teams, and, where feasible, additional trained observers to help, additional trained observers to help pick up the more subtle cues or body language that the dogs may display.

Long-range plans call for a multi-disciplinary team response, including heavy rescue and medical resources. In this situation, those resources were already available in San Francisco, so that was not needed.

Some specific statistics on the dog response to this incident, CARDA personnel put in a total of 966 manhours, and 703 of those were in San Francisco. They drove a total of 34,004 miles, 1,576 of those for the San Francisco response. There were, all together, 20 teams and 14 support personnel deployed over the days following the earthquake, and with 11 dog teams and seven support personnel working in San Francisco in the immediate five-day period following the quake. And we were on site for four out of those five days.

In addition, we had eight additional teams from our own unit on immediate standby, and there were 25 to 30 additional dog teams on alert around the state. Added to that were at least an equal number of dog teams from out of state that were available, should they have been needed. In this situation, they were not.

The overall response timetable for the dog response, again, was -- of course, the time of the earthquake, as everyone knows, was 5:04. At 5:10, our CARDA dispatcher was made aware of the situation, and by 5:45 that evening, we had 12 dog teams on standby, and within a couple of hours, all 12 teams were deployed and on site at three staging areas set up specifically for this incident.

These three staging areas were Palo Alto, Sacramento, and Sebastopol. The additional dog team -- or the initial dog teams responding to the incident came from not only the Bay Area, but the North Bay counties and the Sierras. We have other teams available around the state that could have come in, had they been needed.

It was decided at that point that those three areas would allow the teams to get there as quickly as possible and to get to any part of the Bay Area where they were needed very quickly. Later that evening, the status of standby was suspended temporarily, pending the expected deployment in the early hours of the morning.

Here in San Francisco, the first teams to arrive on scene included a team leader with two dog handlers. The team leader, in addition, had his dog with him as a back-up. They were unable to begin searching until about mid-morning, because of concerns about building safety and liability, and because the fire, which, as I understand, was still not totally under control at that point, required the agencies' primary attention.

Two overhead support personnel, including myself, arrived by mid-morning, and our functions were agency liaison and communications. Both of us are also licensed ham radio operators. And those skills, we found to be very much needed. And I'll get into that in a few minutes.

The initial activities of the overhead team that arrived were, number one, to establish an ongoing liaison with the incident commander. That person was the fire chief, Ed Murphy, the situation at that time. My first activity was to sign in with the communications van and to touch base with Ed Murphy and -- I work out our -- what we needed to do from that point on.

Our next activity, next most critical, was to set up communications, both on site and with our dispatcher in Sacramento and with other areas where the dog teams had responded. We did this using VHS emergency frequencies that CARDA is licensed to carry. These are simplex frequencies in the 155 range. Because they're simplex, they were only usable at the immediate site.

To access at a distance, we needed to use the amateur radio, mainly the VHF 2-meter band. That allowed us access to three different repeaters, those run by the San Francisco Radio Club, by Mount Diablo Radio Club, and the Coastside Amateur Radio Club in Pacifica. Using those three repeaters, we had continuous access to our dispatcher in Sacramento, so he could be kept aware of exactly what was going on on scene at all times and what our needs at that point were. We were also able to be in communication with the teams that were working, or were starting to work, over in the Oakland area.

Our third and primary or concurrent response was to assess the situation and determine what additional needs there were on site at that point. Having done that, I immediately called for additional dog teams. There were four dog teams and three support persons immediately dispatched over to San Francisco from Oakland. They had been on site there, but were not being utilized at the bridge collapse at that point, and so they were made available to us.

In the meantime, the dog teams that had already been on site were able to begin searching buildings. And within the next couple of hours, they cleared ten to twelve buildings, identifying two bodies at the Cervantes Street apartment building. The other buildings were clear of persons missing at that point. There were some buildings that were not able to be searched because they were judged to be too dangerous to get into. Others were able to be searched after some shoring operations had taken place.

The new dog teams arrived on scene within about an hour, and began immediately to work at the apartment building across the street from the burned area. The burn site was also going to be one of our responsibilities, but that, for a few days, was too hot, literally, to get into. So, we were not able to access that until the weekend.

We spent the rest of that night, or most of that night, and all the following day working at that apartment across from the burned area, coordinating with the heavy rescue and heavy equipment operator that was on scene at that time. It appeared that that was being coordinated by the fire department incident commander -- and I could be wrong on that. But I will say that there was a very, very close working relationship between the fire department and the heavy equipment and the dog teams.

We alternated with the heavy equipment, in and out of that site, with the dogs going in to check an area, and then the heavy equipment removing rubble, and in and out that way for most of the night and all of the following day. The dogs had a mild interest in the center area of that building. That turned out to be some broken sewage pipes. It is human scent, but it -- because they did have some level of interest, even though it was mild, it was very important that we continue to work in and out of that site until we knew for sure that it was cleared.

There was no one found additionally at that site.

Saturday and Sunday, we were able to return to begin work at the burned area, looking for remains of anyone that was missing in the fire. We did find one missing person at that location. In addition, the dogs did indicate some nonhuman remains in addition. They were probably pets or other animals on site there.

We -- it was our experience that in most situations, our dogs are very clear on identifying human remains, to the exclusion of animal remains. In this situation, because of the very intense heat of the fire, it's very difficult for us to know for sure, but we did find they had some interest on the nonhuman remains, but, of course, keyed very much heavily -- more heavily on the body that was found.

To summarize our experience, we have to say that the cooperation and support from the San Francisco Fire Department was absolutely superb. It was one of the best agencies, I can say, that we've ever worked with. And that goes for statewide. They were able to provide us with initial information that we needed to work the various sites that we were checking, and they provided the resources that we needed to be able to work.

The initial information that was important to us was some idea of what persons were expected to be missing at the various buildings, and then, if possible, some idea of where, for example, within a large apartment building, those persons were most likely to have been -- to have been located. That's especially critical in a burn situation, because that type of work is very difficult for the dogs, as you can imagine. And anyone who has seen that area or saw it on TV knows that there really was not very much left of what I believe was four buildings and a 24-unit apartment there. It was down to about 12 feet of charcoal, basically.

We were also allowed access to the communications van. Initially, we started setting up communications from my truck, and I very quickly obtained permission to set up our equipment in the City's communication van that was there on site. It did not have amateur radio equipment in it at that point, so we took -- we found that the hand-held radios did not have enough power to access repeaters at a distance. So we brought my own mobile radio out of the truck and wired it into there, and were very successful from that point on.

We did have heavy equipment available to us when we needed it. That was much more easily available on the first day or two. It became more difficult as the days went past, as various City agencies had their own very important set of priorities that they needed equipment for. One of the needs of a dog team in searching a pile of rubble, obviously, is to clear the layers and be able to work on down through it, especially in areas where the dogs have some interest or are alerting, so that -- air scent travels at various paths up through rubble, and to be able to point out exactly where a body is located can be difficult until you can get down closer to it to identify what direction the digging needs to occur.

We had very, very good support also from the police department, from the Department of Public Works, in providing us with that heavy equipment, especially on Sunday, and also from other agency personnel that were active at that site.

Number three, amateur radio communications were absolutely essential to our operation. For obvious reasons, the telephones were not terribly functional in the first few days, and the only way we were able to obtain more help and get more dog teams in, and to let our dispatcher know what was going on, was through amateur radio. All three repeaters had emergency nets in session, and that had started within minutes after the quake and were maintained over the next several days nonstop. Our traffic was considered priority traffic, and we had immediate access to those repeaters whenever we needed it. And that was very, very important for us.

We also had excellent support on site from the Red Cross and Salvation Army and from the other agencies who were providing food and a place to sit down for a minute and sanitary facilities and so forth. That certainly made our job in this incident a lot -- a lot easier to handle for long hours. And I'm sure that's true for all the other agency personnel working at the same time.

Some suggestions that we might make for the future would be easier access to an ongoing central information source. It became difficult as days went by to get accurate information on the number of people who were — if any people were confirmed missing at any certain site. If that information was available, the personnel at the scene had some difficulty accessing that.

We were given — we knew of one woman missing at the burn site, and that was confirmed, both by the firefighter who had had to leave her after the explosion, and from a resident in the area. We had various reports of other persons missing in that building, including from the media, but we were unable to get any confirmation on that or any further information on that.

It would also be helpful for the future if amateur radio equipment, especially the VHF-UHF radio, could be available in the communications van set up at an incident like this. In this case, I had mine with me, and I was able to cut it free of its wiring into my truck and just rewire it to the other. But it would be very helpful if that were available on the scene.

The third thing that's very useful for search dog work is the availability of a structural engineer or some other person qualified to assess the safety of the structure or part of a structure. The fire department was very helpful with this initially. As time went on, there were —there were times when it was unclear just how safe certain parts of a structure might be, and it would have been helpful had we had access to someone else at that point.

I don't mean that as a criticism. It's just an ongoing need for any search personnel.

Heavy equipment is also necessary, the availability of this for dog teams, because, as I mentioned before, once we have an indication from the dog teams that there may be a find, we need to be able to layer down through the rubble to pinpoint exactly where that is. And the fire department immediately provided a truck unit for us on the weekend, but some of the rubble at the burn site was beyond manpower. It needed the heavy equipment. That was made available to us after we requested it on Sunday. Our request went through the fire department, and shortly after, someone from Public Works came along with what was needed and worked with us very well.

The last request that I would have, and this is a generic one for anyone training for disaster work, is an awareness on the part of various jurisdictions of the need for training sites. The only way to train a search team to work safely in rubble is to have rubble to work in. And for reasons of liability, everyone's afraid to let us have access to something like that. So, one of our ongoing problems is the availability of these types of sites. When Kezar Stadium was torn down, we were allowed to have a disaster training exercise on that site, and that was extremely helpful. Being able to do this in other areas would also be very helpful as time goes on.

That's all I have. Thank you.

CHAIRMAN CLUFF: We're kind of short on time for questions, but we could field one or two, if there are any.

VICE-CHAIR RIORDAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

VICE-CHAIR RIORDAN: How many dogs — when you say you had a team, I was unclear what a team was. How many actual dogs have you used in this whole event, say, from San Francisco, on through Oakland, down to Watsonville?

MS. EMERY: Our definition of a team is one dog and one handler. So, we had 20 dogs with their handlers working in the incident over that few-day period, and 11 of them were in San Francisco.

VICE-CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Any other questions?

Yes, Tom.

EXECUTIVE DIRECTOR TOBIN: I was watching your team operate at the Cervantes Street site, and noticed that one of the things that sort of stops the dog, in some cases, is the dog's size, and that they would try to go in, but the holes weren't large enough. And what struck me — and probably a very dumb question — but what about smaller dogs? You know, I was watching the German shepherds and golden retriever working, but are other dogs capable of doing this as well?

MS. EMERY: Yes, they are. It happens that most of our mission-ready dogs right now happen to be larger. One of the dogs that we had with us in Mexico was an Australian kelpie, who comes in about this size (gesturing). And she was, in fact, able to access tunnels that the bigger dogs couldn't get to, and that resulted in a find of about 20 live people in one situation.

Unfortunately, we don't have a lot of people coming in with smaller dogs that are well suited for that. We're not tied to any single breed; we're an equal opportunity employer. Any dog and handler that can do the job and are interested to put in the time involved are welcome to work with us.

And, yeah, we do recognize that that's very helpful sometimes.

EXECUTIVE DIRECTOR TOBIN: You also mentioned that there was a delay because of liability concerns. What were those concerns, and is that something that can be ironed out?

MS. EMERY: Well, I think — this was reported to me by one of the handlers working at the Cervantes Street —in that area, and I wasn't on that scene myself. I was working elsewhere. But it was mentioned that because of the fear of liability, and because we're not agency employees, that that concern existed.

Obviously, there is a concern for building safety, and we're certainly aware of that too. And there was no argument about any sites that were judged unsafe to enter. But we are, in fact, covered through the State Office of Emergency Services. In addition, we have our own liability policy. Liability is a concern across the board at this point, and we certainly run into it a lot.

EXECUTIVE DIRECTOR TOBIN: But there's a liability concern by the fire department, whoever was controlling the site, as to whether or not the City had a liability for your safety. Is —

MS. EMERY: I believe that's correct, as it was told to me, yeah. We'd like to allay that concern in any way we could, because that's certainly not where we're focused. But I understand the concern.

CHAIRMAN CLUFF: Thank you very much.

MS. EMERY: Thank you.

CHAIRMAN CLUFF: The next speaker is Don Chan, but I think he was called away.

Has Don come back? No. Sorry.

We are behind schedule.

Frank Lew, I think, is back.

Frank, where are you?

Yes. Frank Lew will talk to us, from the San Francisco Department of Public Works perspective.

MR. LEW: Good afternoon, commissioners.

When I was contacted late last week to — asked —I was asked to come in and talk before this Commission, I really wasn't clear on perhaps what the focus of this meeting was about. And it was not until this morning when I came in briefly and saw the handout that I understand what the Commission is hoping to get out of this meeting from the public testimony.

And I have to say that my talk, or at least my information I was going to convey to you, was along a little bit different lines. So, I've kind of mentally juggled a little bit, and if it seems like it doesn't quite fit in with what you had originally expected to hear, or perhaps you've heard from the other people before me, why, please forgive me.

I thought I might just start by telling you a little bit about DPW's role in the immediate aftermath of the earthquake, what we've done, some of the results we've had up to date, and perhaps mention a few of the areas where we've had some problems, in terms of the resources, in terms of looking at and sometimes not perhaps selecting the right option.

The earthquake, of course, happened at about five o'clock in the evening. I was able to get back to the City Hall area by about seven. And about nine o'clock or so, in walks a Bechtel engineer offering the services of about 60 or 70 of his engineers in order to help us do inspections the very following day. And, of course, we accepted that, and that became the first significant reinforcement of the City forces that we had expected to apply to the inspection and evaluation of the buildings in San Francisco.

We quickly learned that concentrated areas of damage were primarily in the Marina, in the South of Market, and over in the Financial District. And because we had a school that was available for us over in the Marina District to serve as operations headquarters, and because we had a large parking lot there, we established our temporary field command stations over in Marina Middle School.

Starting the very next day, we were receiving early requests for inspections, and additionally, we were fanning out to do a first-cut reconnaissance to see which areas most needed our systematic survey and which areas we would just simply wait until we received calls and requests for inspections before we would go out to the buildings.

We were quickly joined by a whole stream of volunteer inspectors and engineers. Some came to us through the state OES program, which we had put in a request for. Others came to us simply through offers from individual cities. The City of Los Angeles sent us a whole set of inspectors and engineers, and San Diego, and Sacramento County, and all over. In fact, all told, we had over 500 separate individuals, non-City employees, who performed inspections or evaluations for us, for some period of time.

In fact, that would be one of the more demanding problems that we face if — it's very difficult to manage such a large group of volunteers. For one thing, not all of them had been trained in, say, ATC 20 — I hope that commissioners are aware of what that is. ATC 20 is official — recently this came out — it's called "Procedures for Post-Earthquake Safety Evaluation of Buildings."

Most of the people that we received as volunteers had not gone through the workshop, the four-hour workshop that was put on to acquaint the engineering and inspection professions with this procedure. So, these volunteers were sent out with the field inspection forms, and they filled them out, and we got them back, and, you know — there was a lot of problems where no one tells you — with consistency and so on.

Additionally, just providing support for such a large group of people became a problem, you know, just transportation. For example, how do you get them out to the sites and get them back? Providing supplies, even such things as ID badges, became a kind of — became a source of demand on our time and resources.

But anyway, we did manage to do a systematic sweep of the Marina District. I assume that all of you have either been through it already or will shortly, so I won't dwell much on that, because it's going to be probably analyzed to death.

Let me just tell you that, briefly, as of today, we have stopped doing systematic inspections. We have stopped accepting requests for earthquake damage inspections from individual owners. That is, we're no longer using the procedure that we have set up over the past two weeks to do this. If some tenant or some owner really has some concerns now over the safety of his building and calls the Bureau of Building Inspection, we would simply take that request and refer it to — well, into the same channel that we use for receiving any public complaints about a building. Eventually we'll get out to it, but it's not something that would get immediate response like we have been offering the last two weeks or so.

As of right now, we have approximately 600 — a little bit over 600 buildings that are yellow-tagged.

Let me back up for a moment.

ATC 20 uses a kind of a color-coding scheme for posting. Ideally, we would have had a supply of color stock, green, yellow, and red, and to use the green color stock for notices which, in essence, say the building is not restricted at all from normal use. A yellow notice would be what we'd call limited entry, which means that you — that the owners can go in there only for a brief period of time, and cannot use the building in a normal sense. And red would be unsafe, and do not use, do not enter.

As of today, we have somewhere over 600 buildings which are yellow-tagged, somewhere over 200 which are red-tagged. And we had looked at a total of about almost 2,500, 2,800 buildings. So, that means that we — well, you have that number — with the arithmetic, we'd say that's what — about 1,700 buildings that received a green tag.

In all, we've made about 5,000 to 6,000 inspections. Some of the buildings were visited more than once. And sometimes the status of a building changed. They might go from green to yellow, or even from green to red. Fortunate owners had the — would see their buildings go from yellow to green.

Of all of these buildings that we have red-tagged and yellow-tagged, a very small percentage of them are URM buildings. The red-tagged URM's number between about 15 and 20, and the yellow-tagged URM buildings are between about 50 and 60. And that means that they are URM buildings which came through fairly well.

The areas where our URM buildings were damaged were in areas that you would expect them to have been damaged, which are in the poor soil areas, primarily in the eastern part of the Financial District, that is, from Davis Street on the east, for example, and south of Market. The area of very heavy damage up in the Marina had very few URM buildings — I don't think that any of them were out there.

And the relative lack of damage, of course, should not surprise us. The reports that I've seen of the — well, acceleration figures are somewhere in the 10 percent range, which typically is not going to be high enough, especially with a 15-second duration earthquake, to shake down a URM building. I would imagine that if we'd have had that earthquake last another ten seconds longer, we would have seen many more URM buildings damaged.

A bit of good news. We had so many volunteer inspectors and engineers that came to us that we were able to identify a whole group of them, a hundred-plus, who had other experience or a focus on URM buildings. And so, we formed teams of two, inspection teams. We formed over 50 teams, specifically to look at our URM building stock. We already know the location of all our URM buildings because we had done our inventory several years ago. And to date, we have gone through every one of URM buildings, looking for damage or lack of damage.

In addition to using the ATC 20 damage rapid evaluation form, we also have an extra form to do tracking at — vertical tracking at edges, spans, piers, or walls, step cracks, horizontal cracks at top or bottom to piers, the kind of information that was — is very easy to ascertain on a few, and also fairly easy to check off. We estimate that this extra form, it will provide valuable information for us, and probably only took an extra ten minutes for each inspection team to check off. And we have this information now on all of our URM buildings.

And it's going to be interesting to do an analysis of this data, to see what kind of lessons we learned from it. I can tell you that just from spot-sampling of the information on the damages, that it looks like that the so-called rocking-pier theory that is an integral part of the assumptions of the RGA from Los Angeles, the ABK methodology — that the rocking-pier theory, the damage that we observed doesn't bear out the rocking-pier theory. So we may have to go back and do a — quite a bit more analysis, and maybe a head-scratching on that.

This brings us to perhaps one area that we — that we hope that perhaps the Commission might be able to help us on. We've got this massive stack of inspection sheets. We need — we don't really have the resources, at this point, to, number one, do the data entry, and, number two, to do the analysis that should be done.

I've talked with a structural engineering firm which is currently doing — well, currently under contract to our San Francisco City Planning Department to provide technical information for an EIR on a possible URM program. And that consultant has said that — has estimated that it would probably take anywhere between $10,000 and $50,000, in that range, to do the analysis of all of this data, once it's been inputted. And the data entry and input would probably run somewhere around $10,000.

So, while the information that we would get out of this would be, in some respects, specific for San Francisco, we think that there's much greater and wider applicability of this information for use in other cities and locales as well. I'm sure that the insights we may gain on damage levels and nature of damage and the intensity of shaking would be useful for Oakland, and for Watsonville, and elsewhere. And maybe, perhaps, the Commission might consider helping us find the resources or the means to be able to massage this massive amount of raw data in a form that would be useful for everybody.

A couple of amusing problems that the — I guess they're used to people who are not — who are not caught up enough. San Francisco now is the destination for literally hundreds, if not thousands, of earthquake-chasers, earthquake researchers, and engineers and seismologists and geotechnical engineers. And every one of them almost — and I don't mean this facetiously — but they all expect that they ought to be able to call up somebody in San Francisco and make some official contact, and then get a briefing, or, better yet, get a guided tour through all of the damage areas. And we absolutely have a — not the resources to be able to handle that in a manner that would be anything but a disappointment, almost, to all of these people who are coming in.

Just before I came here, in fact, I received a call from two professors from Germany who wanted to come here and — in fact, who will be arriving on Sunday and would like a guided tour Sunday afternoon, please. This is the kind of consideration that perhaps — well, this is a problem that might be sent to larger jurisdictions, more — maybe in the event of a larger earthquake. But nevertheless, it's an issue that I think maybe needs to be plugged into any disaster response plan, if you will, that the cities develop.

Similarly, we had a — frankly, a tremendous demand on our time by the news media. I mean, they were everywhere underfoot, and we were getting phone calls, you know, in bunches. They were coming in and sticking microphones and klieg lights in our faces. And this is right in the immediate aftermath, and we're all in a reactive mode, you know, and we're just simply trying to cope with the volume of phone calls that come in, requests for inspections and so on. And here are all these media wanting to — wanting to not only know what the latest is, but asking questions which, after a while, they're either leading questions or they're kind of dumb questions.

But you can't really put them off, because that's — I'm sure that this Commission is equally as media-savvy as a city is, and maybe more so. You know, you put off the media sometimes at your risk, as your own risk. They'll write something anyway. They have to.

So, dealing with the media and dealing with all of the earthquake-chasers and all the professional groups that wanted to come in and learn about the damage and learn from the event are issues that really tax the resources of any city, I think, even one as large as San Francisco. And maybe we need to somehow write some — at least some warnings or flag into any kind of a handbook that we may have for — as a model for disaster or post-disaster operations planning.

Another area where we ran into a little bit of problem that we hadn't thought about — well, let me back up for a moment.

This ATC 20 publication had only just come out, I guess, three months, maybe four months ago, and it was only within the last month, month and a half, that there was a half-day workshop that was given to acquaint people who would use it, you know, with how to use this system of — or this technique of procedure.

And so, the — in the book, they talk about green, yellow, and red tags for different categories of notices. Well, San Francisco, and I'm sure most other cities, didn't have the time to get that far, as far as laying in a supply of different colored paper stock, and so on. So, we just simply Xeroxed the form, and it was white. So, when we posted those in places like Chinatown, not only could people not read them — well, they couldn't read the English, so they didn't both — they were just told, "Look for the green, yellow, or red." And here you see a white one.

(Laughter)

MR. LEW: And so, we got all kinds of questions and static on that. In fact, right this evening, in about another hour, hour and a half or so, there's going to be a town hall meeting in Chinatown, as I understand, which — in which I believe at least notices and perhaps what they need to do, and so on, will be further explained to them in Chinese, in Cantonese and Mandarin this time.

So, anyway, those are a few of the little, I guess, amusing — at time amusing, and at time frustrating experiences that we've had over the last two weeks.

My talk has been fairly unstructured and unorganized, and for that, I kind of apologize. I've been involved fairly much in depth with our DPW field operations and with the BBI inspections and the procedure that we've used and so on, and obviously, I have not covered many facets and dimensions of it. And if the Commission has questions on any aspect of it, I'll be happy to answer some questions.

But other than that, I think that that's about all I have right now.

CHAIRMAN CLUFF: Fine, thank you.

Frank, stay there, because I have several observations and questions I'd like to ask. We want to thank you for your taking your time in your busy schedule, with a very important function, to come here to speak with us.

I will ask the staff right now to work on seeing what they can find out to answer your question about some additional resources to help you in your analysis. That's very important perishable data that we need to get into and have analyzed, to make sure that the decisions that are needed are based on good analysis. And so, I would hope that we can find someone who would be able to help you with that question.

MR. LEW: You know, before you get off that subject, Commissioner Cluff, let me say that this form that I just kind of waved at you, I have extra copies, if you're interested. But we not only included spaces in here to collect information on the damage itself, but we even had a second area, that A-B-C-D-E scale of the Wales and Horner damage classification, you know, which has been used, going to back to the Santa Barbara time, but to try to allow us even a better correlation with, historically, what damage that we've observed in the past.

So, I think that out of the analysis of this huge collection of inspection sheets for the UMB's or URM's, that we will be able to know — I guess derive more cost-effective, and maybe, perhaps, just all-around more effective fixes for URM buildings, because up to now, we really have not very much data at all on the effectiveness, and also the damage — correlation of damage prediction to URM's and the intensity of shaking.

Now, that's one area where we have less data than we would like. That is, what were the actual levels of ground accelerations that we experienced at a given site? But in my talks with the USGS people, they were actually hopeful — they were going to give me some kind of an acceleration contour map for San Francisco. I'm not able to understand how they're going to do this, but they were hopeful they can do it. If so, that would really allow us a great deal more insight into being able to correlate ground accelerations versus damage levels.

So, if you can certainly help us at all in getting this data massaged, I think that would be a benefit to not only San Francisco, but to all who are concerned with URM buildings.

CHAIRMAN CLUFF: Well, we'll do our best to help.

The second thing, your frustration with earthquake-chasers, I share your same frustrations, having already hosted a large delegation from Mexico, two delegations from Japan, and — but let me just say that we have benefitted enormously in being professional earthquake-chasers, in going to Japan, to Mexico, to South America and other parts of the world.

We in California have benefitted enormously from that information. And some of the people who have called me from Mexico and so forth were the very people that were, like you, strapped for time when I was there. And they dropped everything to give me whatever I needed. And so, I found it extremely frustrating, but I have yet to say no. I can't, to those individuals that have helped me in foreign countries.

And so, we just have to deal with it. But there is an issue that would help all of us, if we could find some mechanism to at least give them a map, give them a copy of a newspaper that shows where the damage was, so they can go personally look at it. Right now, we're not well organized to do that. And I think if we thought that through in some future events, we could have that organized so that we're not so frustrated.

Third, I'd like your comments on the decision process, and about the yellow and red particularly, and the ability of homeowners to access their personal property and so forth. Can you describe to us how that — we realize you have a tremendous amount of people, and they're probably all acting on their own judgment and so forth, but could you describe to us how that works?

MR. LEW: Those procedures have changed and evolved over the last two weeks.

The day following the earthquake, I was involved in a meeting in which we set the parameters initially. The green, of course, is no restrictions on use. The yellow — and let me say that we were focusing — let's focus momentarily on the Marina District, which was actually cordoned off, and we had about perhaps 25, 30 square blocks — were actually cordoned off, and entry was restricted. And momentarily, we were — at that meeting, we were focused on, "Well, what do we do with the Marina District?," because we had a lot of homeowners and residents in that area, unlike the Financial District where, you know, the business can just — if they were closed, nobody would just show up, there wouldn't be any problem.

In the Marina District, we said that, all right, yellow meant that you could go and visit your building and enter it for a 15-minute period maximum to retrieve belongings.

Let me back up a little bit more first.

Before we would allow anybody in, we started getting computer printouts, and we sorted them as far as the status of buildings. Each time that we got an inspection, a field inspection sheet back, and it said green, yellow, or red, that status and the address was entered into a data base, so that right starting on the second day, we actually had a printout of all the buildings that we had looked at and what the status were.

Now, of course, by the second day, we had only looked at a very small fraction of the Marina District. For all the uninspected buildings, we wouldn't allow anybody in momentarily. The buildings were evacuated.

For those owners that wanted to go back to their building, we asked them for their address, and then we checked it against a list, and if it says its yellow, we said, "Okay, we'll issue you a permission to enter card" — and it's a yellow-colored card this time — and they had to show that to the perimeter guards in order to get in and go to their building. They were not accompanied by anybody. We just kind of told them that, "Hey, you know, you have to give us your word that you'll only go in there for 15 minutes, and then you'll get your possessions and you'll come back out."

On the red-colored buildings, or the unsafe buildings, we actually sent somebody who was with the City or a volunteer, somebody like one of the Civilian Conservation Corps volunteers, for example — we sent somebody to accompany the owner or a tenant to a building and stand outside of the door of that building and make sure that the person comes out within 15 minutes.

We tried to add a little bit of moral pressure to the owners to come out, because, you know, obviously, if they didn't come out in 15 minutes, what are you going to do? Are you go in there and drag them physically out? What we do is we say, okay, we wait until at least two or three people — in the case of apartment buildings — we wait until at least two or three want to enter, and then we take them down there in a group, and we only allow one to go in at a time. That person has to come out before the next person can go in, so we add a little bit of a moral pressure, if you will, peer pressure on them, to keep it short and to come out.

Later on, as our cordoned-off area, as far as our lines, started breaking down a little bit in terms of discipline — what happens is, they were staffed by volunteers — at first by cops, by policemen, and then by volunteers, and after a while, you know, they get a little bit bored or their attention drifts too, you know, because it's kind of a boring job, just standing there, just making sure nobody enters. And we had 24-hour posting there. And so, sometimes by hook, sometimes by crook, sometimes by — just due to inattention of the people who were manning the perimeter, more and more people were getting in.

I mean, it was very difficult for us to — for those people manning the perimeters to really keep out who were not entitled to go in. I mean, there were a lot of PG&E people, there was Water Department people, there were all kinds of people who had a legitimate reason to go into there. And then, of course, there were all — all this media was all, you know — had descended on the place like — and so, after a while, we changed our procedure to say — well, and we stopped accompanying the people, even for the red. We'd just say, "Hey, you know, you've really got to get in there and get out in 15 minutes," and just let it go at that.

That really raises another issue that I didn't touch on earlier in my talk, and that's that it's very, very difficult to maintain official restrictions on the use of a building. I brought with me an article that was in the Examiner, I believe, that illustrates this.

Right immediately after the earthquake, that evening, in fact, in downtown San Francisco, there was a URM building which the upper stories had collapsed pretty badly, and so the building probably will be demolished. But on the first floor was a — was a kind of — one of these Copymat type of operations, with lots and lots of equipment in there, expensive equipment. And the owner was fast-thinking enough to realize that, "Hey, as soon as the City sees this, they're going to kick us out and we won't be able to come back in, and they're going to demolish the building, and we're going to lose our thousands and thousands of dollars of equipment."

So, they went real fast. You know, even though the building could have come down on their head in any aftershock, the owner and all of his employees went into that building time and time again and got all the equipment out between the evening of the earthquake and the next morning. The next morning, our inspectors came out and, sure enough, we red-tagged it and they couldn't go back any more. But it was after they got all the equipment out of there.

You know, a lot of people are willing to brave those risks. And I don't know. There's kind of a — I don't know whether there's a social issue or legal issue here, but, you know, to what extent should — and let's not say "could" as far as authority — but to what extent should we allow individuals who are property owners to, if they choose to, to undergo the risk to go in and retrieve their personal property or do something else in there?

That's an issue that I'm not qualified to address, but it's certainly something that might be — is an area that might be explored and debated. And maybe perhaps this Commission might want to bring people here who have thoughts and expertise in this area to talk about it.

CHAIRMAN CLUFF: Well, I would like to raise that as an issue that we'd like to engage you and some of your people to work with various others to address that issue, because I think it's a real one, and while the fellow with the copy place and so forth took it upon himself to do it, I — even though — given the earthquake being so far away from San Francisco, the likelihood of an aftershock that would do substantial damage is pretty minimal. And so, it would seem to me that one could consider a statement to have people sign completely abolishing, if that's possible, any risk to others, and let them on their own.

You couldn't have wholesale people going into all the buildings, but at least on some orderly fashion, let them organize themselves for each building to allow them time to retrieve the things, rather than 15 minutes, it would seem to me that a longer period of time before those huge dinosaur-like monsters came in and starting tearing the buildings down.

And I watched and the — those huge machines had a hard time in a lot of those buildings that looked like they were very precarious. So, it seemed to me that we ought to learn something out of this. And unfortunate for the people who were affected, but for future earthquakes, perhaps we can develop a procedure that's a bit more responsive to risk-taking and people being able to accomplish retrieving their worldly goods and so forth, and, again, at their own risk.

So, I would hope you would work with us to address this issue.

MR. LEW: Yes. We certainly saw that as an area that really deserves attention of, you know, of a lot of minds and thought on it. Yes.

CHAIRMAN CLUFF: Commissioner Fratessa had a question or an observation.

COMMISSIONER FRATESSA: Well, I didn't want to keep Frank much longer. You just hit on a point, though, and it was almost on the subject, but, you know, after a building has been tagged, it's a real tough judgment that if it's been tagged red, that means it's unsafe. And for anybody to go in, if that's the judgment of the engineer, it's a real tough call on anyone to say, "Okay, well, why don't you go in for a couple of minutes?" Well, it's not safe for a couple of minutes.

And now let me get to the point, Frank. And I'd like you to — what's coming is the question — if you were to plan ahead now for the next one, or you were helping some other agency plan for the next one, specifically, now, in the area of the damage assessment volunteer area, I'm going to ask you in just a second, "What would you do different than you did before this one?" and "What have you learned, just as a summary?"

And the set-up is this. I got a call — I think it was Thursday morning, from one of your colleagues in another agency who had needed help badly — he needed structural engineers — is his word. I said, "Well, what's wrong? You could have called for help." He says, "Yeah, I got the help. They're sending me 100 building inspectors." And he said, "I don't want 100 building inspectors. I want structural engineers." And I'm not pushing something for structural engineers, for a moment.

You just told us you had 500 volunteers, and then you told us also that 100 of those were qualified to do damage assessment. Now, the problem with — even if the facts are a little bit wrong, the issue for you now, planning for the next one, for damage assessment, you have these red, yellow, and green tags, and you need volunteers. Now, how would you instruct another agency to set themselves up to receive those volunteers and get the damage assessment done on some sort of a uniform basis?

MR. LEW: Well —

COMMISSIONER FRATESSA: And you have 30 seconds.

(Laughter)

MR. LEW: Obviously, the success, the level of success would depend upon how much preplanning had taken place. I'm going to be thinking quite a bit about how we might be better prepared exactly, in line with the scenario and the issues you raised. And I'll be happy to, perhaps at a future time at a future meeting, come back and tell the Commission my thoughts.

But momentarily, I would only say that the — if we could have trained even all of our inspectors in ATC 20 and the use of this field manual, then we would have gotten much better consistency in judgment as well as in filling out the data.

And, you know — and this is so — even though we recognize that there's a wide range of inclination among inspectors and among engineers, ranging from the conservative to the liberal, you know — some people — in fact, we had some engineers that — there was one building — let me just give you an example — there was one building, it was a high-rise building downtown, and a pane of glass had popped out, and the glass had landed on an intermediate level belt cornice that extended out a ways and then caught it. Now, any wind could come — a large puff of wind could come by and pick up that plate of glass and sail it elsewhwere. So, this inspector — an engineer, not an inspector, looked at it and said, "My God, you know, somebody could be killed," so he tagged the building red, you know, this building.

And then we had other buildings which really looked very badly damaged. In UMB, there was one URM that I saw on Tehama that really looked very questionable, in my judgment, although I didn't see the inside of it. And it was given a limited entry. I mean, to me, it looked very unstable.

But — so that shows you the range of judgment that was applied. To an extent, the variability can be reduced by having everybody go through a training that tells him, you know, what we — what the ideas are behind the boxes that we want them to check and the categories and options that we want them to indicate. But to some extent, we're always going to have this variation. It's a matter of just trying to reduce the breadth of the variation.

But I'll come back at another time, after I've thought of a few. And perhaps I'll discuss this a little bit more with you. I don't have a real good answer for you, Paul.

COMMISSIONER FRATESSA: Thanks.

CHAIRMAN CLUFF: Commissioner McCarthy had a question.

COMMISSIONER McCARTHY: What are you going to do when homeowners begin to come in and say, "I want to repair my building"? To what level of — what standards are you setting for that?

MR. LEW: Thank you for asing that. That has been a very common question, and one that has created an incredible amount of frustration among the outside engineers like Mr. Fratessa, because, you know, they're concerned, number one, with doing something that the City will — will be acceptable to the City and not be second-guessed later on, and number two, to do something which they feel is professionally, in their opinion, is the right thing to do in terms of safety.

I don't have an answer for you at this point. This coming Thursday, we have convened an ad hoc committee, if you will, of about eight or ten structural engineers and about four or five geotechnical engineers, to just simply meet with the staff, the management of BBI, and myself, and the director of Public Works, to kind of kick some of these issues around, like "What is the appropriate level of strengthening?" Well, even before that, "At what level of damage should a building have sustained before we would even require retroactive strengthening?" You know, if it's just simply a little bit of plaster cracks, should we require the building to be strengthened? If it's leaning, listing, obviously, we do require it. What's the level of damage at which we would invoke the retroactive strengthening?

And then, once we do invoke it, is it at the level of our San Francisco Section 104(f)? Is it at the level of pre-quake, bring it back up to — restore it to the way it was before the quake? Is it to the current San Francisco Code? Is it to the '88 UBC, which we will be adopting in about two months?

Those are valid questions. I'll give you another one that's just as — another example which just shows you how complex this is. If you have gone through the Marina, you will find that many of the buildings that were badly damaged are the buildings that had three or four stories, and the upper stories, typically, appear to be almost undamaged. It was the soft story, what I jokingly say — the base, isolated upper stories, they remain undamaged. And the lower ones, you know, really got knocked down.

Okay. Now, a lot of the owners are proposing to — well, they've got engineers who have proposed to just simply shore up the upper stories and then rebuild completely the lower story. All right. You know, the question of, "Well, what level of strengthening should we require that lower story to be built to, since that is new construction?," you know. It's not retrofit, really.

But an interesting extension of my question would be, "Well, now, after you've finished restoring that first level, you no longer have the soft story building, the upper stories now may be deficient." And yet, you know, the owners will tell you, "Hey, you know, just walk with me. You can see, in the second, third, and fourth stories, there's no damage there, you know. Why are you going to make me add sheer walls or add other reinforcement to it?"

I mean, these are pretty complex issues. And we don't really have all the answers to it. But we are hoping that this meeting the day after tomorrow is going to give us sufficient input that we can promulgate some policies and criteria that will be rational and have some consistency and really be effective, and, hopefully, cost-effective.

You know, other issues like, you know, "Should we allow rebuilding back in the Marina, where we know we have liquefaction problems?" Regardless of how strong you brace the building, you may still have a situation where the building could sustain a lot of damage because of the liquefaction and uneven settlement, for example. We don't know what the answers to those are.

COMMISSIONER McCARTHY: You're going to be asked the question by people more motivated than we are in another week, I'm sure.

CHAIRMAN CLUFF: Tom, you had some questions you wanted to ask?

EXECUTIVE DIRECTOR TOBIN: I just had one question on your inspection of the unreinforced masonry buildings throughout the city. Did you have access to the interiors of all these buildings as well, or was it just an exterior view?

MR. LEW: I don't have a final count on that. But the impression I had was that the inspectors were able to get into approximately half of the buildings. And then, the rest of them were an exterior-only evaluation.

CHAIRMAN CLUFF: Any further questions?

(No response)

CHAIRMAN CLUFF: Thank you, Frank, for your time to come here. And we look forward to a continued working relationship to help address these issues.

We are running behind schedule, so let's keep moving.

The next speaker is Richard Brandt, San Francisco Utilities Department.

Welcome to our Commission meeting.

MR. BRANDT: Thank you for inviting us.

I represent the Public Utilities Commission of San Francisco. And we are the owner and operator of Muni, the Water Department, and Hetch-Hetchy, the reservoirs and power generation in the Sierras.

We have an emergency plan that we use that was already in existence before the earthquake occurred, and we proceeded to carry this out. Basically, the emergency plan calls for the watershed keepers to go out and survey the reservoirs and the dams that we have in the vicinity. And this occurs any time we have an earthquake of 4.0 or greater.

Muni has already discussed, earlier today, what their role was in reviewing and assessing damage.

So, the first thing that occured, of course, was the watershed keepers went out and performed their function. Certain designated people were assigned to the main communications center with the other City damage control people. And our work really began the next day, which consisted of going around and making survey data, and pigiometry readings of all the reservoirs and dams within a 70-mile radius of the city. Now, this included the five major dams we have and the numerous reservoirs.

This data from the reservoirs was immediately, by Thursday, when the telephones were back in service, was faxed to DSOD in Sacramento for their evaluation of any damage.

In addition to this, on Wednesday morning we immediately got together, and we established teams of people to survey the Public Utilities Commission's buildings. And there are probably a hundred or so in the area. Our teams consisted, basically, of a person who had taken the ATC 20 class that was referred to earlier and several structural engineers, combined with other civil engineers, who went out and surveyed the damage.

There are several things I'd like to raise. One is that people were certainly anxious to help. We had a lot more people come to work Wednesday morning than I anticipated. A lot of clerical, administrative people that really couldn't help us in assessment were there wanting to do something, and they felt very frustrated in that they couldn't go out and help dig ditches or whatever was needed to do.

We had several areas that I consider our concerns. Excuse me. One was transportation. We park all of our vehicles in a garage lot that is secured at night so we get no vandalism. The unfortunate thing, of course, was, on Wednesday morning, there was no access to the building to get our vehicles. And this took a large number of people trying to go around, trying to find an owner. The guard wouldn't let us in, the usual type thing. It wasn't until later in the afternoon that we were able to get all of our vehicles.

The other thing was communications. The only phone we had access to was a pay phone across the street from the office, because our telephone system was one of these really neat computer systems, right, that runs off power, which there's no power in the building, and therefore, the communication system was done. And if you wanted to make a phone call, you had to go over and stand in line at the pay phone across the street at Union Plaza.

The other part about the communication is that when I would send out a team to a certain building, it was hours before I would find out what the status of that building was. And also, I could not then dispatch them to any other immediate area. And so, there was a lot of time lost in getting a team out, having them assess a building, getting back, debriefing them, and sending them to other buildings around the facility.

The only building, I might report, we found that was unserviceable was the one that was reported earlier, which is an old, unreinforced masonry building out at Geneva that was built before the turn of the century. That was condemned, I guess, and we condemned it again. So, I don't know how many times it'll take to condemn it before it finally gets torn down. But it is a national historic building, and therefore, there's other problems.

The watershed keepers reported no damage. Our surveys, that were completed by Saturday, reported no major movement to any of our facilities. There were a couple of reservoirs that appeared to have some additional cracks, but no apparent leakage or structural damage. And these have been evaluated to confirm that there has been no damage to them other than what has been reported.

We did tag all of our buildings with the red, yellow, and green. Obviously, they're all green except for one. There was one bit of confusion, and that was, about Thursday or Friday, people in the buildings somehow got the impression that only BBI could declare a building safe. And then there was some confusion on that, and it had to be cleared up that that wasn't necessarily the issue.

Overall, if I had to summarize what occurred, I would say our basic plan worked, at least for this size earthquake. And that was because the major — all the region was still functioning, at least in San Francisco.

People were, on a whole, wanting to work and wanting to do things and cooperate. As was mentioned earlier, the — I drove home Tuesday night, and it only took me about four or five minutes longer to get home than it does during a normal day. People — cars would stop at an intersection, let people go. No one cut in front of you. At major intersections, individuals had taken it upon themselves to go out and direct traffic and appeared to be doing, from my observation, very well. And people were obeying. The man would put up his hand, people would stop, and there was no horns honking and this type of thing, which is very encouraging.

However, I will report that by Thursday, people's attitudes had reverted back to pre-earthquake conditions.

(Laughter)

MR. BRANDT: So, if there is something that — I think an improvement would be — is we need more and better communications. I know that the Water Department had received from cellular telephones, which they received during the week, and they were really very important in their performing their work and getting the pipes in the city back in service. But communication was something that is — you just can't say enough for. It's — being in a command post and having 14 groups out doing things around the area, and for hours not knowing what's going on, when the newspapers are reporting that hundreds of people have died, and there's fires and everything else, it was very exasperating, to say the least.

And so, those are the basic thoughts I had.

CHAIRMAN CLUFF: Fine. Thank you very much.

There are probably questions and comments.

Commissioner Kockelman.

COMMISSIONER KOCKELMAN: Just a quick one. I'm getting groggy after seven or eight hours, and you are too.

Why didn't you have access to your vehicles?

MR. BRANDT: Why didn't we?

COMMISSIONER KOCKELMAN: Yeah.

MR. BRANDT: Oh. They were in a basement garage —

COMMISSIONER KOCKELMAN: Yeah.

MR. BRANDT: — that was secured when they locked it at night.

COMMISSIONER KOCKELMAN: Yeah. Don't they open it in the morning?

MR. BRANDT: This was a — no — okay. Go back one. This is not a City-owned garage.

COMMISSIONER KOCKELMAN: Yeah.

MR. BRANDT: It's a private garage that we rent services from. And when we went back in the building, the guard was instructed, "Don't let anybody in." And he was not about — he was probably a good Marine, I guess, but he was not about to let anybody in that building to take anything out. Those were his orders. So, we had to get to the owner of the building, which happened to be, you know, a leasing company that leased from this guy, who bought from that guy. Anyway —

COMMISSIONER KOCKELMAN: It's a misunderstanding.

MR. BRANDT: And we had to get — we finally got to a person that could tell him, "Let these people out."

COMMISSIONER KOCKELMAN: I'm sorry. I just —

MR. BRANDT: That's what occurred.

CHAIRMAN CLUFF: Further questions of —

COMMISSIONER PEAK: Lloyd?

CHAIRMAN CLUFF: Yes.

COMMISSIONER PEAK: Was there any damage at any Hetch-Hetchy facilities?

MR. BRANDT: None at all. Nothing at all. They have — they — several of the secretaries reported they had felt the quake, but that was the only observation we had. There was absolutely no damage at all to Hetch-Hetchy, or to the Water Department facilities, other than in the Marina District.

CHAIRMAN CLUFF: Any other questions?

(No response)

CHAIRMAN CLUFF: Well, thank you very much for coming today.

MR. BRANDT: Thank you for your time.

CHAIRMAN CLUFF: We're not sure about some of the future speakers, since we are getting near the end. But is Peter Keane in the audience?

(No response)

CHAIRMAN CLUFF: Okay. He's not here.

Kent Paxton, San Mateo?

EXECUTIVE DIRECTOR TOBIN: Yes, he's here.

CHAIRMAN CLUFF: Our intent is to complete the agenda and break for dinner at maybe a little bit delayed time, so that we don't come back after dinner.

MR. PAXTON: Members of the Commission, I'm very pleased to be here. Thank you very much for inviting me. And I've very — I want to reassure you that I'm very much aware that, at least on my printed list, I'm the last speaker between you and the dinner bell. And I'll try to get through quickly.

What I'd like to do is touch on just three major points, our immediate experience in San Mateo County, which is the county immediately to the south of you; I'd like to touch on the operational area concept, which is part of your working plan, and the way that worked in San Mateo County; and then on mutual aid issues in general. And my remarks are based on our experience and on a large critique we held last Friday with all 20 cities in the county participating.

First, San Mateo, in its experience — we're configured a little differently from most counties in California. In most counties in California, emergency services will have an office at the county level, and then have separate and independent offices at some cities below the county level. In three of the 58 counties, however, joint powers agreements have been signed between all the cities in that county and the county itself to coordinate the effort and establish just one office for emergency planning. And that's our situation in San Mateo County. All 20 cities work with the county and jointly fund my office, which is located in Redwood City.

We consider ourselves, as background, very lucky. You've heard that, I'm sure, a number of times today. And we're all aware of it. We're very lucky, both with regard to the size of the earthquake and its location, which was to the south of us, and the duration of shaking. And we understand very well that that's — we can't count on that in the next earthquakes we face.

Also lucky for us was the time of day, just after five o'clock. Most government people were still in the government buildings and available to us at our emergency center, and also the fact that our communications system stayed up and going. We have a microwave system, jointly owned by the cities and the county, which connects all city managers, police chiefs, fire chiefs, in a telephone-like net, a voice net, and which also has a teletype side to it.

So, we can get out hard copy to all cities, and back from the cities, information in hard copy.

Notwithstanding those lucky features of this particular earthquake, we did have damages in San Mateo County, not nearly as serious as in San Francisco, to our north, or Santa Cruz, to our south, or Alameda, to our east. But we did have about $300 million in damages. We had a few building failures, and I think when the data comes in, that damage is going to correlate fairly well with soil type, with the bay mud and the unconsolidated alluvial soil types.

We had three hazardous materials incidents which we were able to manage our way through, and some fires, but again, all of manageable size.

I was very pleased, and it came out in our debrief, at the rapidity with which we were able to mobilize our emergency operating center. As I said, most of the major players were still in the county buildings.

I should note that among government buildings in San Mateo County, the three most severely impacted were the three buildings in the county government center in Redwood City, including the one our emergency center is located in, the county administration building, the county office building, and the old courthouse.

As a matter of fact, we had a lot of damage to the main building and to the utility systems within it, water leaks and gas leaks. And just as we were setting up our emergency operating center, we became aware of a gas leak and decided to move out to the street. We were able to do that very quickly and effectively. We had a communications bus already parked there to carry some of the overload of communications we were anticipating. And we operated from out in the street, as an emergency operating center, for about 45 minutes before we got the gas shut off and the air cleared.

The operating center itself worked rather well. Again, we're a joint powers agreement between all 20 cities in the county, so we have to be aware not just of county problems, but also of city problems as well. We had three county buildings that had serious problems with both structural and nonstructural damage. Luckily, several of our county building inspectors, and people from — engineers from our architecture and engineering section of our General Services Department, had been to the ATC seminar in September, and where they had never been confident before at all about their assigned role to inspect county buildings, they were, after that class. They had developed a level of confidence, and they did a very good job.

The county also had major problems with regard to the question of jail evacuation. That was much on our minds, not only in the course of the incident — the jail buildings in Redwood City, both of them, were impacted, and there was a big question, serious policy questions, about whether we had to evacuate the jail or not.

We were also interested, at the same time, about the status of our dams — there are 33 of them in the county, including a couple that would cause tremendous loss of life should they ever fail — and our hospitals, and we got through those checks very quickly, thanks to our microwave system.

All of our cities were contacted within half an hour, and then again repeatedly throughout the evening, and reported that most problems were manageable. We did do some mutual aid or sharing within the county, but not to a significant degree.

We did — I think because we made a fairly quick assessment, and part of that was because we were less damaged than other counties, but part of it, I think, was because we are a joint powers agreement and an operational area — because we made a rather quick assessment, we were able to offer mutual aid assistance to other counties. We talked to the county executive — our county manager talked to the Santa Clara County executive within two hours of the earthquake, offering help, and a member of our Board of Supervisors talked to Mayor Agnos in the San Francisco operating center, again, within about two hours after the earthquake, to offer assistance.

We did have a number of units standing by, two fire strike teams, two ambulance strike teams, prepared to go in the first day.

We did eventually provide mutual aid assistance, coroners to Oakland, law enforcement to help the security four or five days last week, to Santa Cruz, fire strike teams to Santa Cruz, public health nurses, mental health workers to Santa Cruz, and one or two others that I don't have noted.

Now, let me speak just for a moment about operational areas. In California law, an operational area is defined as the county and all its constituent cities. And under California law, all counties must operate in an emergency, in a state of war emergency, as an operational area. Unfortunately — or fortunately, I should say, we don't operate in a state of war emergency that often, so most counties and cities are not as well prepared as we could be to use this, this way of coordinating city and county efforts.

It came out in the presentation by PG&E, their problem with dealing with four, five, six, eight cities, and the difficulty of coordinating that effort. Where you have a joint powers agreement and a single point of contact, that kind of difficulty is at least reduced. We were talking to PG&E through our one center, and then back to our cities, throughout the first days.

This operational area configuration is not only favored in law, but it's just favored from a commonsense point of view. It's also a matter of policy by the State Office of Emergency Services. In a catastrophic earthquake, OES expects all counties to operate as operational areas. And I don't think we've done enough training to be able to do that that effectively.

Let me speak very briefly, again, about my observations, my personal observations, about our mutual aid systems. At the local level, they seem to be working well. Within the county, we had coordinated through this operational area an emergency operating center. We did coordinate some mutual aid within the county, and we did have strike teams up and ready to go to neighboring counties. And I communicated that to neighboring counties.

We did make one request for mutual aid assistance to our state region that first night, but it was apparently lost in the confusion. We did request some structural engineers to help us with the county buildings, but that one never got through.

I have an observation, and that is that requests that were filled from mutual aid, I have the impression that many of them were filled on the basis of personal relationships and calls person-to-person, and not through our planned mutual aid system, which has the state mutual aid regions in each area coordinating the system. And I think that's something that we just have to understand is going to happen. But I think we can do a better job in coordinating regional mutual aid.

And to get that job done, I think we're going to have to bite the bullet and write some regional emergency plans. That's something we've talked about, but I think it's something we have to do.

We also have to conduct regional emergency exercises. We had an exercise scheduled for last Friday, which I was pleased to cancel, although I did get calls on it throughout the week.

A couple of conclusions and some recommendations for you. I've always felt that the fundamental requirements of effective emergency response were basically two things. One are relationships. To the extent people knew and trusted one another, through the planning process, through training, through exercising together, I think we responded well. And a second fundamental requirement is communications. We had, two years previous, received a grant from BAREPP to prepare a manual on strengthening local government communication systems. And we did prepare that manual, with engineering contract assistance, and we had strengthened most of our communications systems.

Now, whether or not they would have failed in this particular earthquake, I do not know. But I think it's very, very important, and it's in your work plan as well, to promote that kind of activity throughout the state. If we want our emergency services system to work, we're going to have to harden our communications systems.

Finally, my final observation before my recommendations, there a Chinese ideogram that I was looking for today — I couldn't find it — I think Tom maybe could help me — "crisis," is it the word "crisis"? — is made up of two —

EXECUTIVE DIRECTOR TOBIN: Right.

MR. PAXTON: — two separate symbols, one "danger" and one "opportunity." And I've always liked that idea; I think many of us have.

I think the danger in this earthquake — and there are dangers in this earthquake — but I think there's a danger in that because this earthquake was, by and large, as you've heard today, manageable, that we in the public may be overconfident about our ability to manage an emergency. And I've heard that from the Chair throughout the afternoon.

A great man I used to work for defined a disaster as "when the normal way of doing things no longer works." In this earthquake, I think the normal way of doing things almost could continue to serve. But in an earthquake that was incrementally larger, I don't think that's true at all.

So, that's the danger we face in taking for granted the idea that we can manage through any earthquake because we got through this one.

And finally, there's the opportunity. We are learning a lot of lessons, and this is certainly a step in the process. And I think now is the moment to go for the solutions, and I don't need to tell you that. I think leaders and the public are ready to go for solutions, and many of them are outlined in your work plan, and have been for years.

I have three separate recommendations.

One, on operational areas, in literature on many past earthquakes, both prepared by the Commission, by the Division of Mines and Geology, and others, it has frequently been observed that the operational area concept is a good one, and we ought to do more work on it. I think we're going to have to bite the bullet and actually do that work, maybe even a special subcommittee or task force set up to work through some of these operational area issues and why it's so difficult to get operational areas up and implemented.

Secondly, on the issue of the mutual aid regions, we need mutual aid plans at the mutual aid region level, including medical mutual aid throughout the region, transportation plans — that's certainly clear from this earthquake — and communications plans. We also need exercises, regional exercises, in which we can test our plans and our training.

And finally, we've just got to protect our communications system, and we have to get the word out on information that's widely available now on just how — not how easy it is to do that, but how doable it is. One of the things I've certainly learned in the last two weeks is that the little incremental things we do do have impact and do make a difference.

I'd be glad to answer any questions or submit anything else you need in writing.

CHAIRMAN CLUFF: Well, thank you very much for coming. And everyone has busy schedules these days. We appreciate your taking the time to come and talk to us, and we'll certainly want to get back and exchange information.

Are there any questions from the commissioners?

VICE-CHAIR RIORDAN: Chairman Cluff?

CHAIRMAN CLUFF: Yes.

VICE-CHAIR RIORDAN: I have a question.

When you speak of a regional area — I happen to be from Southern California — but what are you speaking of? Several counties together are you speaking about, or are you speaking of your county individually?

MR. PAXTON: The definition in state law of an operational area is the county and all the jurisdictions within it.

VICE-CHAIR RIORDAN: Um-hmm.

MR. PAXTON: That's the operational area.

VICE-CHAIR RIORDAN: Right.

MR. PAXTON: The next level up is what is a subset of the State Office of Emergency Services. There are six state regions throughout the state. And you, for instance, are — I think you're in Region 1, aren't you?

VICE-CHAIR RIORDAN: I don't even know the number exactly, but I'm curious, when you — when you have — you're speaking of more than one county, is what you're speaking of, when you say a regional exercise.

MR. PAXTON: Yes, indeed. Yes.

VICE-CHAIR RIORDAN: Yeah. Okay. That's what I wanted to clarify.

MR. PAXTON: Because that, it seems to me — in an earthquake of larger proportions than this one, that's going to be the tough thing to do. We'll be stumbling through it at the county operational area level, but I think the whole process of managing a mutual aid system throughout the Bay Area, for instance, in our case, or throughout your area in Southern California, is going to be very, very, very difficult. We have to do more planning and training and exercising in how we're going to accomplish that.

CHAIRMAN CLUFF: Any further questions?

Tom?

EXECUTIVE DIRECTOR TOBIN: Yeah.

Kent, you had communications with Sacramento the entire time, I take it, with OES?

MR. PAXTON: Yes, we did, good communications with OES.

EXECUTIVE DIRECTOR TOBIN: And what about with Santa Clara County — or Santa Cruz County? I'm sorry.

MR. PAXTON: Santa Cruz, we had difficulty. Our phone system was operating. We were using primarily the phone, and we were — we were busying out down there. Now, I'm not sure whether they had physical — I'm still not sure whether they had physical damage to their system at the county EOC or just an overload condition.

EXECUTIVE DIRECTOR TOBIN: Right.

MR. PAXTON: We — part of our county microwave system goes into Santa Cruz, just by chance. Our county fire department is actually the California Division of Forestry, who dispatches out of Santa Cruz County, so we have a link down there. And we could get through that way, microwave to their radio, if that was — that was the kind of thing you'd have to do in an earthquake larger than this one, to get through.

CHAIRMAN CLUFF: Further questions?

Yes, Keith.

COMMISSIONER UMEMOTO: Yes. I was kind of curious to know how expensive your emergency communications system might have been, and how adaptable would that be to some of the other regions? Because I know — maybe some of the other counties along the jurisdictions may not have necessarily a lot of resources that are able to enable them to purchase similar systems.

MR. PAXTON: Well, we've got several million dollars sunk into it, over a period from the '60's to present. We're currently — we've invested about half a million dollars, or will have invested half a million dollars by the end of this year in replacing the major components of the system, to bring it up to grade.

One of the things we have discussed in our critique is adding many more agencies to that system. It's capable of carrying many more.

CHAIRMAN CLUFF: Dan?

Go ahead, Barbara.

VICE-CHAIR RIORDAN: I was just going to say to Commissioner Umemoto, San Bernardino County is working on their communication system right now. And we're probably approaching $12 million to $13 million. Of course, we have 22,000 square miles that we have to cover, and it's a little different. But that's — you're talking substantial investments.

MR. PAXTON: Big, big money. And the move now, the move — what we're looking at in our county, beyond the microwave, is a trumped radio system, which I wouldn't even try to describe, other than it's a radio system that works something like a telephone system. You don't need to know — you don't have to be on a given frequency. You just have to know who you want to talk to.

And that system, the way we're pricing it out, is several millions of dollars, but would add tremendously to our operational capability.

CHAIRMAN CLUFF: Dan, you had a question?

COMMISSIONER EBERLE: Yeah, Kent. One of our previous speakers, the news director from KGO Radio, expressed several frustrations with dealing with multiple agencies and trying to get information to pass it on to the general public. Did you experience any type of problems with dealing with the media, or did you provide — were you in a position to provide information for a region?

MR. PAXTON: Well, we had tremendous frustrations trying to deal with multiple radio and television stations. Toss it back to them too, right?

No, we got through to them. We were — but we have to call them serially, of course. There were comments in the newspapers here in San Francisco about the emergency broadcast system, and I think that's another item on our agenda. We've got to make those kinds of systems work better.

But we had to — San Mateo is in an interesting situation. We're between two markets, the San Jose market and the San Francisco market. So, they're not on us right away for information. We're not getting buried. But at the same time, we want to get messages out, and it's sometimes hard to get their attention. And to get their attention, we have to call them station by station.

We do have access to the emergency broadcast system radio connect to Alameda, then into KNBR. But, as I say, there are questions about the operation of that system.

CHAIRMAN EBERLE: Did they know to go to you, the operational area?

MR. PAXTON: Yes, I think most of them did, yeah. But we didn't wait for them to call us. We were very pro-active. We had a room of five or six people just making calls to the media.

CHAIRMAN CLUFF: Bob?

COMMISSIONER McCARTHY: I just wanted to — I wanted to tease you just a little bit, you know. You're kind of minimizing this earthquake. There's only two of them this century that were bigger. And I'm looking over at Bill Waste, and his eyes are still pretty big from what he saw two weeks ago, you know. This is — this wasn't just a real small one.

What are the — and I've read all kinds of things in the — from the news media, you know — what are the chances of one being significantly larger than this for the rest of our lives? Is this something we can — that we know is going to happen?

CHAIRMAN CLUFF: Oh. Very high. Sure.

Let me refer you to the Time magazine article that shows the presentation of the results of the USGS Earthquake Probability Panel. I was part of that panel. And I don't know whether you were on the Commission when I gave the summary of those activities. But this nicely, in a very excellent fashion, summarizes the conclusion.

And while we relieved the strain on one small segment of the San Andreas Fault, down just northeast of Santa Cruz, this map clearly shows that there's a .3 probability of a magnitude 7 earthquake on the northerly segment just north of that. That's from that area north to Daly City. So, that would put a magnitude 7 earthquake — this is not the big 1906 repeat — that has a low likelihood in this area — but a magnitude 7 earthquake 5 miles west of here would have been quite a different earthquake. And that has one of the higher probabilities in the State of California.

And in the East Bay, we have the Hayward. In my judgment, this earthquake has added stress to the segment north, and so has increased the probability of that going off, and has added stress to the Hayward and Calaveras Fault system. So, I wouldn't be surprised to see a large earthquake over on the Hayward Fault in the next few years.

When we look back at the historic record, that's exactly what happened in the mid-1860's. In 1865, there was a magnitude 7 earthquake on the segment that went off, in the same section. Three years later, 1868, the Hayward Fault went off in the East Bay.

So, in Northern California, those are the high-probability areas. Now, disregarding the Parkfield — you're aware of that, and that's not a devastating earthquake — it's an interesting experience — that has still a very high probability of going off.

But in Southern California, there's the Mojave segment that's directly northeast of Los Angeles — has a 30 percent likelihood of a magnitude 7.5 or greater earthquake. And down near San Bernardino, the Coachella Valley and the Imperial Valley segments of the San Andreas both have .4 and .5 likelihoods of going off in magnitude 7.5 or greater earthquakes.

So, this just kind of draws attention that this was a good experience to help us get better prepared. And it hasn't minimized, other than on the segment that went off, a larger earthquake. The 1906, we think, is a hundred years or so off, and we can kind of look at the long term for that one. But we still have some hot spots that we shouldn't lay back and say, "Well, we've got a long time."

COMMISSIONER McCARTHY: Well, what you're really saying, in some respects, is that if the same size earthquake that occurred two weeks ago occurred right here, it would do tremendously greater damage.

CHAIRMAN CLUFF: Yeah. It would be a whole different earthquake.

COMMISSIONER McCARTHY: And I — you know, I — you read in the paper — this is referred to as the "San Francisco Earthquake." I think we — I really think we should point out that the earthquake did not occur in San Francisco. I don't know —

CHAIRMAN CLUFF: Well, the official name of the earthquake is the Loma Prieta earthquake.

COMMISSIONER McCARTHY: I know that, but I wonder if that's everyone —

CHAIRMAN CLUFF: We're going to make the paper — well, we will have a chance at our —

VICE-CHAIR RIORDAN: That's why.

CHAIRMAN CLUFF: — at our hearing in San Jose, is it, Tom? — the USGS will come in and give us a much more thorough discussion and maybe answer some more direct questions and talk about the likelihoods and so forth.

I've given you my own personal judgments.

So, any further —

Yes, Dan.

COMMISSIONER EBERLE: I was just going to —

CHAIRMAN CLUFF: Let's — are they addressed to the speaker?

COMMISSIONER EBERLE: No. It was just a general comment.

CHAIRMAN CLUFF: Okay. Thank you very much for your coming here to talk to us.

Go ahead.

COMMISSIONER EBERLE: It was the point that Kent pointed out, and the comments you made earlier, is that there's a real danger of the general public feeling that, because this was a moderate earthquake and it was rather localized, that the — and it could be responded to effectively by emergency services agencies, there could be the concern, the danger that the general public feels that we are prepared to deal with these types of earthquakes.

And at this level and at this scale of danger, yeah, I think we've made some tremendous headway. But this is not the major earthquake that we're all concerned about. And I think that is a danger that we can't forget.

CHAIRMAN CLUFF: Let me just ask — we're getting into a more general discussion of the Commission, which I think we need to do, even though we're all rather tired after sitting here all day. But are there other speakers that haven't had a chance to present their information that are here?

We had an attorney, a Peter Keane. I guess he decided not to come or got delayed.

Did the mayor ever show up?

He never did.

EXECUTIVE DIRECTOR TOBIN: He's hiding under his desk.

(Laughter)

VICE-CHAIR RIORDAN: That's your mayor. That's your mayor.

(Laughter)

CHAIRMAN CLUFF: Okay. We've given him a second chance to appear at another place where he might have some local competition with another mayor, or maybe at our meeting that we will have back here in San Francisco during our regular session. We'll give him a second chance.

There's a Larry Meredith that was scheduled to be here at six o'clock. So, while we're waiting for him, I'm going to continue our meeting, and we'll have an open discussion. And then, if Meredith shows up on time, we'll have him give his presentation, and then we will go to dinner and adjourn from dinner, rather than come back.

I've been informed that there are no people that have expressed an interest in the public comments, to make any presentations, so we won't have to deal with that.

So, let's get back to our general discussion and see if we can't guide it. I'd like to have kind of a focused, but nevertheless loose, brainstorming session on, given what we know and what we have heard here today, what are the issues, and how do we want to deal with them? Let's see if we can't make a list of the issues and how we want to deal with them, and how they fit into the initiatives that we all passed on to the governor and the legislature just a few months ago.

So, open discussion with regard to the issues.

Will.

COMMISSIONER PEAK: Well, I'll just start out by saying the obvious thing, I think. In my mind, a big priority, a thing that's been neglected the most, is the liquefaction or foundation problems. And even though, in the San Francisco area, apparently, these areas were mapped out, the fact they were helped the response considerably, I feel, to these area. And they are not mapped out in other parts of the state.

And there are a lot of — a lot of areas of poor foundation which, in any given earthquake, are always the worst place to be.

And if you drive over here through the Marina area and drive down Lombard, you'd never know there had been an earthquake. But you look to your left, and some of the streets are still closed a half-block down. Go to the right, you see the same kind of buildings, and there's no problem.

So, it's a very localized thing, but I think a very good example to us and to others that the foundation of structures of any kind, but particularly of buildings, is of tremendous concern in earthquakes. And some sort of studies of poor foundation areas in major metropolitan areas, I think, should be directed or asked for.

CHAIRMAN CLUFF: Yeah. I would — I was glad to hear you hear that last, rather than restrict it to liquefaction.

COMMISSIONER PEAK: No, it's not liquefaction.

CHAIRMAN CLUFF: All classes of it.

COMMISSIONER PEAK: It's all classes of foundation.

CHAIRMAN CLUFF: Right, yes.

COMMISSIONER PEAK: Liquefaction just happens to be one of them.

CHAIRMAN CLUFF: Sure. Right.

It's an issue that we've all recognized, those of us working in that area, that we need to do. There are, like you said, in the San Francisco Bay Area, a lot of good maps that have been around, some of them, for thirty years, that help that. We need to increase that and understand the behavior and how well structures that accounted for that condition behaved.

It was impressive to me to visit PG&E's Moss Landing facility at Moss Landing and see the University of California's research facility right across the little slough from Moss Landing, completely destroyed because of ground failure problems, and PG&E's Moss Landing, on piling foundation, unaffected in terms of the power plant. The switch yard was hit hard, and that expected. But from the standpoint of any ground failure causing structural failure, that didn't occur.

And there are a lot of other examples of that. I even think I saw that in the Marina District. It would be interesting to know, within the Marina District, which ones of those buildings may have had pile foundations, if any, or — because there were a number of those buildings that, from the outside view that I saw, were relatively unaffected compared to adjacent buildings.

So, I agree. That's an issue. We not only ought to map areas, but we ought to learn everything we can on which ones performed well and why.

Paul?

COMMISSIONER FRATESSA: Now that we've heard from the soil people, I would expand your comment to something a little broader.

We knew in advance that those areas are problem areas, okay. And that's been proven by the pockets of damage. And so, we do know, and it's valid that that needs to be addressed.

And I hope that one of the lessons is that people would realize that the people who told you that in advance were right. It is going to happen. That's an issue. It's clear.

So, you expand that one step further. There are certain types of buildings which are not going to perform well. And for — I won't go into the details, but we have looked at buildings which we have indicated should not have performed well in an earthquake, and our predictions are turning out to be quite accurate.

And so, the lesson is these things don't work. And we know it, and we've talked about them in advance, and the public needs to take notice that these things really don't work. They're not going to perform.

Now, I haven't seen or gotten documentation on the Marina area, but I have been told that many of the buildings simply had no bracing in the lowest floor. We know that doesn't work, okay. And it's very frustrating to know that people, for whatever reasons, aren't going to retrofit those buildings. They've got to be retrofitted so that they come up — I don't care whether it's the '73 or the '79 or the '88, but we know those buildings don't work, and the — it's no mystery to the engineering profession.

So, expanding what you know about your soils, we also know about structural performance. And this has been a beautiful lesson, although tragic in many respects. But it — you know, these things were predictable, and we have to remind the public that this was not a big earthquake, and the next one, for instance, on the Hayward, is going to tell the same story.

CHAIRMAN CLUFF: But be much worse, I think.

Yes.

COMMISSIONER FRATESSA: Well, certain things don't work.

CHAIRMAN CLUFF: Right. Right.

Bill?

COMMISSIONER WASTE: Lloyd, I kept hearing one word coming through today, and that was communications. It's pretty clear that under this kind of a situation, the conventional communications systems are either going to, A) overload and be ineffective, or, B) they're going to be damaged and be ineffective, and that, therefore, one of the things that we need to stress is the need for parallel or redundancy — redundant systems that are in place and usable before something like this happens, because, otherwise — and we've heard it several times — the forces that are out there that are capable of doing something simply are not able to talk to each other, they don't know where they're supposed to go. They may know what they're supposed to do, but they don't know where they're supposed to do it.

And it's a one-word description, but it's very important.

I'd also like to add a personal observation. And there's sort of a cult growing up in San Francisco right now: if you don't tell me your earthquake story, I won't tell you mine.

(Laughter)

COMMISSIONER WASTE: It saves a lot of time and trouble.

(Laughter)

COMMISSIONER WASTE: But, my personal observation, as an unwilling participant in this scene, is that once again, I think we've got to go to the public in general and tell them, "Look, when something happens, you are on your own for a certain period of time. You are going to have to depend on your own resources, or those immediately around you — the fire department, the police department — they will come and they will operate when they can. But immediately, you are on your own. And the simple little things, like the flashlights, like the canned food, like the water, are going to be needed to keep you going for a day or two."

And I'll give you an example of that. I live in a nine-story building. It's an apartment building. There are nine apartments on the building. I live on the sixth floor. There was only one source of emergency heat, that is, a little camp stove that I had, that was available in the whole building. So I — if I was a profiteer, I could have made a lot of money selling hot water for coffee and soup and these kinds of things. But this is in an area where the people are sophisticated, they're knowledgeable, they've been told. And in that whole building, there was one little camp stove.

And I think that's a message we have to go back and we have to repeat it this year and repeat it next year and repeat it the following year. "You are on your own."

CHAIRMAN CLUFF: Even though we have that written in a lot of our scenarios, for 72 hours, I think the quotes are, you're on your own. And it's —

COMMISSIONER WASTE: Tell them and tell them again. Repeat it.

CHAIRMAN CLUFF: Right.

Any further — yes, Dan?

COMMISSIONER EBERLE: Following up on Commissioner Waste's communications issue, I'd like to talk to you — what I'd consider or call the soft communications, not necessarily how you talk, but who you talk to. And that lends itself to the whole concept of how emergency management is organized in California.

And certainly, I think, the operational area is an extremely effective means of doing that. I think that's one issue that we have to look at very seriously.

Also, I think that another issue for emergency management is to raise emergency management as a priority issue at the public agency level. I think we heard some things earlier today where it is not a high-level interest or priority in agencies, and it could hurt in the long run.

CHAIRMAN CLUFF: Yes, Bob.

COMMISSIONER McCARTHY: Well, I've mentioned this privately to several of you, but I think, when we heard the gentleman from the San Francisco Public Works Department say that he had no idea to what standard the repairs should be done, it strikes me that we do have an idea, and we have this model code that we've promulgated throughout the state. And maybe that's not precisely the right thing, but it certainly — it comes a lot closer than having no idea at all.

I think that we should, in some fashion, get the word to these gentlemen who are going to need to make this decision in the next day or two, or if not a day or two, certainly a week or two, as to what to tell people as to what level to build.

Now, I know, you know, we've been talking about this, but the question's coming up next week, Paul. The guy needs to know.

CHAIRMAN CLUFF: Paul, what's your view?

COMMISSIONER FRATESSA: Frank Lew is well in touch with the status of all of the stuff that's going on at the state level, and actually has copies of the URM, twelfth version of it. So, he was telling you not so much he doesn't know personally — he's very familiar with it — but politically, it is a different question, because it's not been enacted.

So —

COMMISSIONER McCARTHY: Well —

COMMISSIONER FRATESSA: — he has much more information than that, and the profession does. It's a matter of, as a public official, settling down and finding out that politically, this particular ordinance will be acceptable.

COMMISSIONER McCARTHY: Okay. Paul, in this area where it suffered extensive earthquake damage, there's probably thirty political entities that need to make that decision. Is that a fair estimate of the number?

COMMISSIONER FRATESSA: I have no idea.

COMMISSIONER McCARTHY: Well, I mean the various cities and counties all are —

CHAIRMAN CLUFF: You know, it might be — it might be —

COMMISSIONER McCARTHY: And they need to do that pretty quick.

CHAIRMAN CLUFF: It might be useful, since we are going to be having a meeting, our regular meeting, back here in San Francisco, right at this very place, in a week, to ask someone to look into that here and give us a rundown on just what those entities are and what their policies are and so forth, so we can try to understand this better.

I, like with Paul, know a lot of individuals who are responsible technical people within various agencies. But it's the decision-maker that isn't necessarily a technical person, that hasn't implemented a program, or is not paying attention to it, or whatever. And we need to get access to those people. Those are the ones that —

VICE-CHAIR RIORDAN: Oh, excuse me.

May I just comment a moment?

CHAIRMAN CLUFF: Yes.

VICE-CHAIR RIORDAN: Because it does flow up to those decision-makers who, obviously, are politically motivated. And I go back to what I've said to the staff and to the chairman.

I think the study or the survey — let's call it a survey — of the unreinforced buildings and how they performed, the ones that were strengthened, because I think that's very critical, is going to be very important to us as we then begin to require certain things of these building owners. We can better, I think, have a level of confidence that we're requiring the correct thing, and then giving to the owners, "Here, look what happened. Here, here is actually what happened in this particular most current earthquake."

And I don't know, from a professional point of view, but I'm hopeful that the information that San Francisco seems to have started to collect, if that's good information, I hope we can capture it and make something out it.

CHAIRMAN CLUFF: Yes. We need to find a resource to help those people complete putting it together, gathering the data that's still out there that needs to be gathered, and then analyzing it so we can use it in the proper way.

COMMISSIONER McCARTHY: Well, the point I'm trying to make is that's not going to help the guy that has the building that needs to be repaired next week. Now, what standard is he to build to? The various political subdivisions of the state within this area should give the citizen an answer on that, I think. And it seems to me that we could guide them, is what I'm suggesting. You know, some — I think —

CHAIRMAN CLUFF: Tom, why don't you give some —

EXECUTIVE DIRECTOR TOBIN: I think we have two issues. One is the matter that we're raising here in terms of looking at this earthquake and issues that will exist in future earthquakes. And that is, and very definitely, the repair standard and how far do you go, and what are those kinds of codes. And we don't have a lot of that available to us. And that's one of the conclusions, I think, that we have right now. We have the model ordinance, or Version 11 or 12 of the improved model ordinance that will apply to unreinforced masonry buildings. But, as I think Paul and Frank have both alluded to, when you repair other buildings, do you use a '73 code or a '76 or and '85 or '88?

And those are decisions that are going to be made sort of ad hoc, jurisdiction to jurisdiction. This Commission doesn't have, you know, an operational role after an earthquake, but we do have one that's advisory. And, you know, our law does say that we're advisory to state and local governments and others. And in that capacity, we have a letter that will — if it wasn't mailed today, will be mailed tomorrow — it's addressed to, I think, about 75 jurisdictions in the Bay Area where we've raised this issue, because the issue has come up and we have been asked this, as to what standard should we repair to.

Well, what we're advising the local governments is that they not only repair buildings to their existing condition, but very definitely recognize that those buildings were incapable of resisting the forces of this earthquake, and so they should be considering repairing it to a higher version. We've referred them to a copy of the model ordinance, letting them know that a consensus document dealing with unreinforced masonry bearing wall buildings was underway. We referred them to the methodology in the guidebook that approaches other — the nonbearing-wall type of unreinforced masonry buildings, and suggested a consideration of San Francisco's 104(f) provision in their code that requires buildings that are being altered, or with a change of use, or occupancy is being changed, to be upgraded to a higher standard.

And so, we're trying to give them that advice and get it into their hands so that each individual jurisdiction can make their decision.

We've also informed them that their — if they have the right ordinance structure and the right policies in place, owners of these buildings can qualify for some FEMA monies that can be used for upgrading the buildings, as an enticement. And no one else is getting this information out, and so, you know, your suggestion that we do it and questions from others has prompted us to do it.

So, we are getting that out, and we're trying, I think, to fill that proper role that we have. But yet, we don't have the resources to engage in the discussions with each city in terms of what's proper for that city.

COMMISSIONER McCARTHY: Well, I can appreciate we're an advisory group. But, you know, somehow or other, if there's 30 jurisdictions or 75, you know, it strikes of chaos, if everyone does it differently.

CHAIRMAN CLUFF: Paul, you want to continue to focus on this?

COMMISSIONER FRATESSA: Yeah. I — this issue isn't quite as much in chaos as you might think it is. The two things that get focused on, number one, we were talking about the standard to which it should be compared. There are two parts to that standard. One is the force level. The other is the materials.

And there's no disagreement that the minimum force level is the '73 Uniform Building Code. The engineering profession says, "Don't go below that." And that's somewhat less than the later on, or the '88. But don't be less than the '73. That's step one.

The problem with certain materials, or certain types of building, is the materials. And you don't know how strong brick is, or old concrete. And that's where the judgment is not universal at this point. There's not a consensus, but there's enough information that an engineer ought to be able to arrive at rational conclusions.

So, in the engineering profession, I think there's enough information out to make those judgments. And so, I don't think it's as bad off as it might be — one might be led to believe.

But the problem that I'm concerned with, and that started to get raised here, is you get a building that's been damaged — and this can go all the way down to a single-family residence — plaster's cracked, or they've got a crack in this wall. And somebody says, "Well, fine. In the residence, you just put plaster over it and you never see it again. And in this other wall here, we'll epoxy crack it — or patch the crack with epoxy, and therefore, it's just as good as it was before the earthquake."

The problem is, is that the earthquake came along and caused that damage, so the system of the building, the design of the building, is what the problem is. So you can't just repair it. You've got to go back and look at the design, figure out why the damage occurred, and make it strong enough to avoid that damage.

And I have a specific building in mind, which will go unnamed, which survived the earthquake by accident. It's a soft-story, nonductile frame, and there's a few stories on top of it. And because they happened to put in some concrete around the stairwells between the second and first floor, they took the whole beating and saved this building. So, it's safe to occupy — they've epoxied those cracks. But we have recommended that they come in and put sheer walls and eliminate the soft story.

And that's what should be happening as a result of this earthquake.

And whether it's the '73 or the '88 code, get the soft story out of there.

To the Marina area, where there's little bracing in certain buildings from the second floor down to the first, you simply have to put the bracing in.

CHAIRMAN CLUFF: Paul, it seems to me that one of the issues is how can we be effective in helping implement that? And you wear another hat, from the structural engineer's point of view. And I would assume, knowing all of those structural engineers, that you people are working on advising, at least in Northern California, exactly what ought to be done.

COMMISSIONER FRATESSA: Yeah. The structural engineers are being called by the local building officials and asked a lot of these questions. How do you approach it? Unfortunately, one of the agencies locally did us a favor —or disfavor — by saying, "Well, if this office over here happens to do it, they're structural engineers, and it'll be okay." That's not too consistent. But the local agencies are calling structural engineers and saying, "Give us some advice." And that's the best thing, I think, right now they can do, in the interim.

CHAIRMAN CLUFF: Bill?

COMMISSIONER PEAK: I'd like to add to Bob's point for a moment.

To get the owners and bankers and communities to upgrade the buildings, which I — you know, I think we should do, you need a carrot or a stick. The stick is in regulations, and it takes time to adopt them. And you're always facing time, with the legislative frenzy right now. So, you have the carrot. And I think, in the next couple days, you're going to have a big, juicy carrot.

And my experience was in Alaska and San Fernando and then Whittier, that there's a lot of state and federal money that goes in, with no strings attached. And I suppose the bottom line is, if you want strings attached and you want it upgraded in the couple days, is to go down to the legislature and twist their arms and say, "You've got to add strength."

Now, they're all going to be very generous, you know, and they're going to want to help their constituents, so it's going to be really an uphill battle. But if we do the same thing we did in Whittier, we're just putting money back into buildings without upgrading them.

CHAIRMAN CLUFF: Paul, do you want to give any further comments?

Oh, yes. Go ahead, Randy.

COMMISSIONER PESTOR: I think one thing in the next fews months it would be good to have for a meeting would be looking into the mitigation plan that's done after an earthquake. We spent some time talking about that after the Whittier Narrows earthquake, and I think it's supposed to be done in six months. And that's what FEMA uses, and you're supposed to start implementing that so-called mitigation program, and then if you don't, then it can jeopardize future FEMA assistance.

Now, I don't know whether or not that mitigation plan from the Whittier Narrows earthquake has been done, but if it hasn't, or it's weak, we should know about it. So, I think we should question OES on that.

Also, in exploring that a little bit more, if we begin implementing an effective mitigation program after this earthquake, then we can have the benefit of some of the matching 50 percent funds that you mentioned, Tom, for mitigation, which I think is an excellent opportunity for us to leverage some of our limited resources here at the state.

So, if we have a $1 billion bond or a $2 billion bond, maybe we can get a 50 percent match from the feds. But what that means is we have to look at this intelligently, do an effective mitigation program, begin implementing it, and let the state and the local governments know that if it's not implemented, the next time there's a disaster, we may not have any FEMA money coming down.

And that's what we faced with the floods and levee protection, because we weren't implementing the mitigation program for that. So, I think we have to get that word out and look at it as an opportunity to get the matching money from the feds to mitigate these before the disaster hits.

So, again, I think that's something that would be worthwhile looking into in the next few months, three or four months.

COMMISSIONER McCARTHY: Were they kidding us about that building that was condemned in 1907? Was that a joke?

(Laughter)

EXECUTIVE DIRECTOR TOBIN: If you drive by it, it looks it was — it's not a joke. I didn't think it was a joke.

CHAIRMAN CLUFF: Stan, did I see your hand up?

COMMISSIONER SCOTT: Well, yeah. Yes, you did.

I just want to make one quick comment. I mean, this has been a — I think, a very, very beneficial discussion of existing buildings, damaged buildings, retrofit, repair, and all of that. I just hope that in all of this, we don't lose sight of the new buildings, that is, the buildings that are not yet built.

No doubt we're doing a much better job than we used to. Thank God we are. But I have no confidence — no real confidence that in all the cases we should be. We have been recently and are and will be putting up buildings that are uniformly as resistant as they ought to be. And the more we learn about the earthquake hazard, I think, as time goes along, the less forgivable it is if that indeed is the case, if we're still letting some not sufficiently resistant buildings slip through and be constructed.

CHAIRMAN CLUFF: Paul.

COMMISSIONER FRATESSA: Gee. Stan, I think that's an interesting remark, because the reports that I have back is that the engineered buildings that were shaken to any degree have performed very well. I said that coming in here, and then the first speaker that was here gave us a — that I heard — was on the San Francisco Airport, and those are modern, engineered buildings. And the damage that I saw, although it was nonstructural, is unacceptable to me.

And I would be very concerned that we would have a public thinking that that is a type of nonstructural damage which we feel is acceptable by our code.

So, to take that point a step further, I want to express to the Commission my opinion that when they tell me that that building performed just as it was supposed to, all three buildings, that, from my view, that is unacceptable. And we — either the building framework was moving too much, or that ceiling wasn't braced. But those are provisions that are currently contained in our code, and I'm very concerned about the performance of those buildings.

You can take that a step farther. And I view an airport, because of the number of people who occupy it, as being what we call a special occupancy structure. And under our modern code now, that would even require a peer review of the design. And I'm just gravely concerned about that performance. And I think I would — I don't know how we can look into that or get a report on how they are going to repair that airport so that doesn't occur again.

COMMISSIONER McCARTHY: Mr. Chairman, are we going to talk about the bridges and highways?

CHAIRMAN CLUFF: We can a little bit, but —

COMMISSIONER McCARTHY: Is that going to — should we save that for another day?

CHAIRMAN CLUFF: We're going to focus on — we will clearly focus on that in Oakland, because that's the topic at Cypress and on the Oakland side. And if there's something urgent that needs to come up here, we did have the Golden Gate people come in, and — the Golden Gate Bridge. If you want to raise an issue, put it on the list —

COMMISSIONER McCARTHY: No, I wasn't raising an issue, except I wanted to point out to Paul, if you're worried about a broken glass at the airport, you know, what do you think of the Bay Bridge and I-880? My God, you know, it's — what about the order of magnitude of failures?

COMMISSIONER FRATESSA: Let's finish the airport first.

COMMISSIONER McCARTHY: Huh?

COMMISSIONER FRATESSA: Let's finish the airport first, because those are building designs under modern codes.

CHAIRMAN CLUFF: Yeah. The airport's a new facility, relatively.

COMMISSIONER FRATESSA: It's supposed to withstand the —

COMMISSIONER PEAK: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER PEAK: May I comment on the airport from a layman, nontechnical standpoint?

I talked to a senior structural engineer who I respect very much, and he said all three of those buildings could have been stiffened so they wouldn't drift so far. And I think, if that's true, that that's unacceptable to close an airport down when the runways are all good, for 24 hours, and have the tower come down, that's not acceptable. And to have 4 inches of water on the floor and those micro system wires, that's just not acceptable.

COMMISSIONER McCARTHY: I don't think so either.

CHAIRMAN CLUFF: Well, so far, we've got pretty much of a consensus about the acceptability of that level of damage.

Further issues that we want to list? Have we about meeting-ed out?

Paul?

COMMISSIONER FRATESSA: I'm meeting-ed out, but my list — communications were raised, we talked about it.

There was another issue raised, that helicopters would play an — you know, if we were having a local war, you'd send one of those AWACS planes up in the air to be a command center. And it seemed to me, as I was listening to this, that some system of getting some helicopters up in the air to direct the operations should be part of a plan.

There is another issue which I was asking Frank Lew about, having to do with the organization and the uniformity of these damage assessors, or the damage assessment system, those three cards, those three tags. And I think that needs to be stressed.

It didn't appear — it was — although it all was happening, it wasn't happening quite so everybody knew what was going on and under whose authority that was being done. And one of the issues I was hoping the attorney would show up for is, an independent engineer who couldn't get into one of those teams goes out and assesses a building. Under whose authority, and can he tag the building? Even though he may be eminently qualified, is he legally liable?

I also think the public needs to understand the meaning of damage assessment. Those are — the three tags go on the building after a — what amounts to a rather brief, rapid review of the building. And the understanding of what you do after your building was tagged has simply got to be — it's got to be gotten out to the public as to what's the meaning of that. And maybe that's — the building departments can help with that.

Okay. That's —

CHAIRMAN CLUFF: Fine. Thank you.

Further discussion or additional issues we need to put down on our list?

Tom, you have —

EXECUTIVE DIRECTOR TOBIN: Well, I have piles of issues, Mr. Chairman, but I've also — you know, we have the computers that we can start writing them down on. So, you know, I won't go through them. And the staff will be brainstorming these from our own observations and what we've heard, and starting to organize this in a fashion that we can look at the issues as they're evolving.

But I had, first, an announcement, and secondly, a question, if it's proper at this time.

Our next meeting is scheduled for November 8th, and it's going to be held in Oakland at the Lakeside Park Garden Center. Now, the Lakeside Park is at the north — the top of Lake Merritt. The street, actually, is Bellevue. It's 666 Bellevue. But you reach Bellevue from Grand Avenue. Grand Avenue's a major street in Oakland.

So, that's the meeting on the 8th.

On the 9th, on November 9th, our meeting is right back here, in this room. This is where we had planned that meeting to have been held all the time, and we were able to get this room on short notice because we already had the connection with the Presidio. So, we'll be back here.

On the 14th, we're going to go to Santa Cruz, and on the 15th we'll go to San Jose. The location of those two meetings, we're still working on, or Dom Cortese's office in San Jose is helping us find meeting rooms at those two locations.

COMMISSIONER KOCKELMAN: The 15th is where, Tom?

EXECUTIVE DIRECTOR TOBIN: The 15th we'll be in San Jose.

COMMISSIONER FRATESSA: These are all 9:30?

EXECUTIVE DIRECTOR TOBIN: Yeah, let's discussed that.

CHAIRMAN CLUFF: I raised the question a little bit earlier to one or two of you. Given the valuable process that went here today, would it be appropriate to start a little bit early and not try to go so late?

What's the desire of the Commission?

COMMISSIONER FRATESSA: I would have a simple comment. Missing the traffic is an important issue. And I — it was more convenient to come here late and go home late, just to miss the bulk of the traffic. I think we're going to have to plan around that, with the state of the freeways.

CHAIRMAN CLUFF: Now, when we have the meeting of Oakland, I would assume that that's not too far from a BART station. Is that right or not?

EXECUTIVE DIRECTOR TOBIN: It's not too close.

COMMISSIONER FRATESSA: It's not too close, either.

I can pick people up. It's easy. Oakland's easy. No problem.

CHAIRMAN CLUFF: Yeah.

COMMISSIONER FRATESSA: And I can pick people up at BART stations, if they'd like.

CHAIRMAN CLUFF: And I think the planning that I personally have done for our South Bay meetings, Santa Cruz and San Jose, would be to go down the night before and stay overnight, so that we could start the meeting early.

And if we do that, then that should alleviate the problem with starting early.

Yes, Randy?

COMMISSIONER PESTOR: So, by what time — is there agreement, then, on what time starting early means? 8:30? Nine o'clock?

CHAIRMAN CLUFF: Well, is 9:30 early enough for Oakland? Let's take it meeting by meeting.

I would propose we start a little earlier, unless someone strongly objects. Say at least nine o'clock, or even 8:30.

COMMISSIONER PEAK: For that, bring the staff down the night before?

EXECUTIVE DIRECTOR TOBIN: It almost does anyway, because of traffic considerations, getting the equipment down, and being set up.

COMMISSIONER PEAK: We've got to worry about the cost of this, I suppose.

CHAIRMAN CLUFF: Yeah.

Okay. Any disagreements on 8:30 in Oakland?

(No response)

CHAIRMAN CLUFF: Okay. 8:30 in Oakland is when we'll start.

Let's go to the next meeting, then, which will be —

EXECUTIVE DIRECTOR TOBIN: The next meeting will be the first of two days — or, excuse me — and then the Oakland meeting, the following day, it would nine o'clock back here.

CHAIRMAN CLUFF: Back here, yeah.

EXECUTIVE DIRECTOR TOBIN: Or, excuse me — it'll be on the 9th back here. I didn't mean nine o'clock.

CHAIRMAN CLUFF: Yeah, okay.

COMMISSIONER PEAK: What time?

CHAIRMAN CLUFF: Well, given the comments, what are your wishes?

COMMISSIONER McCARTHY: How do you get back and forth between — you know? Should we come over the bridge —

COMMISSIONER WASTE: You go to Bakersfield, and then you come back.

(Laughter)

COMMISSIONER FRATESSA: I would expect trouble getting here before 9:30 or 10.

EXECUTIVE DIRECTOR TOBIN: Oh, traffic actually was not bad. It took less than twenty minutes to come in from Mill Valley this morning. The bridge was faster than normal. It was —

COMMISSIONER FRATESSA: Well, it took, you know, about an hour for me to get to —

EXECUTIVE DIRECTOR TOBIN: To Richmond, probably, the Richmond Bridge.

CHAIRMAN CLUFF: Well, I think our next —

EXECUTIVE DIRECTOR TOBIN: We can pick you up at BART.

CHAIRMAN CLUFF: Our next meeting — well, that's another option, Paul.

COMMISSIONER FRATESSA: Any time — oh, BART to San Francisco?

EXECUTIVE DIRECTOR TOBIN: Yes.

CHAIRMAN CLUFF: You know, some of us can just make it —

COMMISSIONER FRATESSA: Well, make it any time you want.

CHAIRMAN CLUFF: Okay. Let's start at nine o'clock on the 9th in San Francisco.

EXECUTIVE DIRECTOR TOBIN: At the San Francisco meeting, we will try to end that at an earlier time. Would you agree to that, because that's the end of — the second of two days?

CHAIRMAN CLUFF: Yeah, sure.

EXECUTIVE DIRECTOR TOBIN: What time would you like to end the San Francisco?

CHAIRMAN CLUFF: Well, let's say four o'clock. How's four o'clock?

EXECUTIVE DIRECTOR TOBIN: Okay. All right.

The Oakland meeting, we might go — we'll at least go to dinnertime, and we might go later, depending on the line-up, if that's all right.

CHAIRMAN CLUFF: My guess is, based on overhearing a number of people — I went out to make a couple of phone calls, and the various press who had not known about this meeting were on the telephone yelling — one guy was using sailor's language out there — wanting to know why he — and he said, "If they have future meetings, I want to make sure that we notify everybody." And so, my guess is, future meetings will have a lot more interest. And so, we may get bogged down with some activities that may cause us to go longer.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, the next pair of meetings will be on the 14th and 15th, Santa Cruz and San Jose. The times — you — can we start Santa Cruz at 9:30?

CHAIRMAN CLUFF: Okay. Is that —

EXECUTIVE DIRECTOR TOBIN: You'll have to be there the night before because, by then, I'll think there will still be real restrictions on access to Santa Cruz by road.

CHAIRMAN CLUFF: Well, if we're there the night before, then, why don't we start earlier? Let's start at 8:30, okay?

So, 8:30 on Santa Cruz. And that's fairly close to San Jose, although it depends on —

COMMISSIONER McCARTHY: Well, not really, not if you want to use the highway, it isn't.

CHAIRMAN CLUFF: It depends on whether you come over the — well, it's been passable many — more than 50 percent of the time, that's been fully passable.

EXECUTIVE DIRECTOR TOBIN: I think the plan would be to go to San Jose that evening, and go by way of 101. And so, it's a longer drive than you usually have to, but it won't be that bad.

CHAIRMAN CLUFF: Okay. So, San Jose, let's propose starting San Jose at 8:30 as well.

EXECUTIVE DIRECTOR TOBIN: Okay. Randy, you had some —

COMMISSIONER PESTOR: Now, the only thing I wanted to mention about the 9th — and Tom's aware of this, and he's been very helpful about making some suggestions on this — there's going to be a really — a very important meeting in San Jose on the 9th that the League and SESAC have put together, a whole-day conference, from like eight to six, for cities and counties that were affected by the earthquake. And they're having people there from engineering sessions, and planning, and zoning, and historic preservation, and you name it, the whole — across the map.

Now, I'm going to be — and Dom's going to be there too, you know, for two of the sessions and opening statements and the whole shot. And, hopefully, you know, some of the staff can help out at that meeting. Now, it might mean that it's going to be a little bit lean here on the 9th, but I think it is really important in this situation for the Seismic Safety Commission staff to help the League and SESAC out at this meeting, because that's where the cities and the counties need to help.

CHAIRMAN CLUFF: Sure, yes. We'll do what we can.

Okay. Any further questions about the meetings? We will be sending out agendas on that in advance, hopefully.

EXECUTIVE DIRECTOR TOBIN: Now, the next question I have has to do with either individuals you would like to hear from at one of these meetings, or issues that you think that we — that you didn't hear about today that you think that we should be looking into to find speakers.

CHAIRMAN CLUFF: When are we going to get the minutes of the hearing of last month, Tom?

EXECUTIVE DIRECTOR TOBIN: They'll go in the mail Friday, for our regular meeting, for November 9th.

COMMISSIONER McCARTHY: I was very interested in what the fellow from CalTrans said. I'm not sure I remember correctly, but I would certainly like —

EXECUTIVE DIRECTOR TOBIN: Oh, you mean from the workshops.

COMMISSIONER McCARTHY: Yeah.

EXECUTIVE DIRECTOR TOBIN: Oh. From the workshop we had. We're having a transcript typed and —

MS. BOSWELL: We should get it tomorrow.

EXECUTIVE DIRECTOR TOBIN: Oh, okay. We expect the transcript really any time. Tomorrow was sort of the due date, right.

We've gone through the Commission's minutes since we began, to find the times in the minutes when CalTrans actually came before the Commission, and Xeroxed copies of them, and have made that packet available to the press through the CalTrans media office, who's dealing, you know, with the press.

There's nothing — as we've skimmed it, there's nothing in there that's alarming, or something that is terribly sensational. But at least we wanted to get that together and — I mean, certainly, I think that regardless of what people will say about CalTrans, they've met with us on a regular basis and are very forthright and answered whatever questions they were asked, and cooperative. And so, we're providing that information.

CHAIRMAN CLUFF: So, do we have suggestions for speakers? Was this mix here appropriate? Do we want to emphasize other things, or invite —

COMMISSIONER KOCKELMAN: Well, I don't know if it's appropriate, but I'd like to hear from a few city and county land use planners. Now, I realize we're focusing on preparedness, response, and recovery, and I don't know if you want to move into a long-term reduction, which is what, you know, city planners are faced with. So, I'd like to hear from a few.

CHAIRMAN CLUFF: Further — Dan?

COMMISSIONER EBERLE: I assume you have OES scheduled too.

EXECUTIVE DIRECTOR TOBIN: I think this is a bad time for us to ask either FEMA or OES to come before the Commission, because, in reality, their emergency really starts when the recovery period and the operation of the disaster application centers occurs. So, the idea is that we would ask them to come probably in — or expect them to come at the December meeting. That might still be too soon, but I think it's okay.

For this meeting, I did ask Bob Vickers, the regional director of FEMA, and he basically said that, you know, he could not leave the disaster field office because there's such pressure to do this right. I also asked the regional director for OES, but, you know, with the same caveat, recognizing that — you know, that these people are really on the hot seat right now, and I guess what we were going to want to hear from them largely has to do with what they're doing right now.

So, it'll be probably the December meeting.

Our December meeting had been scheduled for San Diego. And I've discussed it with the chairman, and we will not hold it in San Diego. We will either hold it in Sacramento or back here in the Bay Area. And at that time, my intention would be to call in state agencies so that we hear, you know, OSHPOG and all the other agencies, the Division of Safety of Dams, and others who've conducted their investigations on the earthquake.

COMMISSIONER KOCKELMAN: You're more apt to get their top people if you have it in Sacramento.

EXECUTIVE DIRECTOR TOBIN: That's probably true, yes.

CHAIRMAN CLUFF: Well, it depends. There were some of the state agency people sitting here today, like the CPUC, who are very interested in participating in future meetings. And that would be an appropriate one for them to participate in.

COMMISSIONER KOCKELMAN: Two months down the road, they'll be back in there.

CHAIRMAN CLUFF: Tom I don't know whether the radio had the things mixed up again, but when I drove here this morning, there was an announcement that FEMA was closing their field offices because of lack of activity, and that they were sending their people back. Now, whether or not that's true — but that's what the radio said.

EXECUTIVE DIRECTOR TOBIN: That's highly suspicious.

CHAIRMAN CLUFF: Well, that's what I thought.

FROM THE AUDIENCE: Just two.

EXECUTIVE DIRECTOR TOBIN: What?

FROM THE AUDIENCE: Just two offices.

EXECUTIVE DIRECTOR TOBIN: They closed two, huh?

CHAIRMAN CLUFF: Just two, huh? Well, the radio said all of them.

Yes, Bill?

COMMISSIONER WASTE: Lloyd, it occurs to me that — and part of what we're doing here is to create a record, and I think it would be important to include, at some point, the health services, although their response was not needed to anywhere near the extent that it could have been. Nonetheless, I think we should, for the record, include them in some of the suggestions.

VICE-CHAIR RIORDAN: And include mental health, because I know we've sent a tremendous number of clinicians in, just giving a response.

CHAIRMAN CLUFF: Bill, I think, as I said earlier — I don't know whether you were here or not — but the unique timing of the two teams playing in the Bay Area during the crucial time, I think, saved us one heck of a lot of lives and injuries. And it could have been quite different.

COMMISSIONER WASTE: I have a friend from Chicago that wants credit for that, by virtue of the fact that if it weren't for Chicago's demise —

(Laughter)

CHAIRMAN CLUFF: There was a hand over here.

Oh, Keith.

COMMISSIONER UMEMOTO: Yes. I think it would be a good idea also to invite someone from one of the telephone — or one of the communications people.

EXECUTIVE DIRECTOR TOBIN: Pac Tel and Cellular One I think we should invite. There's another cellular company. Is it GTE? I think so.

Okay.

CHAIRMAN CLUFF: How about the process that went on today? Was it — it seemed efficient?

COMMISSIONER UMEMOTO: One more.

CHAIRMAN CLUFF: Yes.

COMMISSIONER UMEMOTO: One more, on law enforcement. I think law enforcement was used quite extensively throughout the affected area. And if they haven't been suggested already, I'd like to suggest that.

EXECUTIVE DIRECTOR TOBIN: Law enforcement.

COMMISSIONER PEAK: We also have the University of California at Berkeley, who you've talked to, and I know they had some damage over there. They might be able to report on it.

EXECUTIVE DIRECTOR TOBIN: Okay. And also UC Santa Cruz we'll ask.

COMMISSIONER PEAK: And Stanford, I guess, has reported —

EXECUTIVE DIRECTOR TOBIN: Stanford, yes.

COMMISSIONER EBERLE: They're supposed to come out with a new report documenting the private schools.

CHAIRMAN CLUFF: Private schools?

EXECUTIVE DIRECTOR TOBIN: If we can find — yeah, well, we will look and maybe we'll see if we can find some that have some examples.

There's another issue too, that some early Field Act schools in the Watsonville-San Jose area were damaged. Is that — Fred, is that right?

FROM THE AUDIENCE: One.

EXECUTIVE DIRECTOR TOBIN: One. So, I mean, that's —

COMMISSIONER PEAK: You all had a great hearing down in Santa Cruz, where you had technology and IBM and Lockheed come in, and they gave us, you know, buildings and response and repairs. Would it be possible maybe one of those come back and say how things were?

EXECUTIVE DIRECTOR TOBIN: Brenda has — well, Brenda has lined up, I think, about three of those people to come back.

COMMISSIONER UMEMOTO: Is FMC one of them, by the way?

EXECUTIVE DIRECTOR TOBIN: Is FMC one?

MS. BOSWELL: Who? FMC?

COMMISSIONER UMEMOTO: FMC, I think, had to shut down some of their operations.

FROM THE AUDIENCE: We're checking that, and we have not had a response back from five different contractors.

EXECUTIVE DIRECTOR TOBIN: And they may not want to.

Five different defense contractors or high-tech companies that we're in touch with down there. We all promised to be nice to them.

COMMISSIONER FRATESSA: There was a fellow named Blake Rothfuss, who's a member of the Structural Engineers Association, who is the chairman of their Disaster Emergency Services Committee, and he was in a unique position of having to handle that for the first time in Northern California. And it might be worth getting him to come in and comment.

EXECUTIVE DIRECTOR TOBIN: His name, again?

COMMISSIONER FRATESSA: Blake Rothfuss. I'll fill you in on that.

But he will tell you — he's a relatively young fellow, and it's the first time he had to handle the experience of trying to get OES volunteers, somewhere, rationally — interesting comments.

EXECUTIVE DIRECTOR TOBIN: We had a request from OES to take that over, because, I guess, Blake was being — was actually being worn out after a few days. And I think Fred found Gene Cole — is that right? — Gene Cole to step in to take over for a few days.

COMMISSIONER FRATESSA: But that's an interesting experience.

CHAIRMAN CLUFF: I remember a presentation, whether it was at a Commission meeting or whether it was at an EERI annual meeting — or maybe it was both — but a fellow from IBM explained the retrofit program they went through with all of their main buildings in — at their headquarters just south of San Jose.

And it was a very extensive investment that they did, initiated on their own, just to protect their financial investment. And it might be interesting to see — that's fairly close to the energy release — it might be interesting to see how well that came through, and particularly their experience with computers.

Other — yes?

FROM THE AUDIENCE: My previous company did that. So, if you want to contact them, you're welcome.

CHAIRMAN CLUFF: Okay. We can see if someone can come and talk to us about that, probably at the San Jose meeting.

EXECUTIVE DIRECTOR TOBIN: We heard a lot from PG&E today, I know, but is anybody interested in the Moss Landing power plant and the switch yards? The people we heard from today were in the distribution end of the business. working really with the customers. And there was damage to a 500-KV substation, some switch yards, and something that's, you know, more industrial in nature.

COMMISSIONER PEAK: At our Santa Cruz hearing.

EXECUTIVE DIRECTOR TOBIN: Santa Cruz will be just fine.

CHAIRMAN CLUFF: Yeah. There were three substations that got really whacked, Metcalf, Moss Landing, and the San Mateo substation. And that's — the combination of those is why the power was out was out for so long.

COMMISSIONER FRATESSA: I think the issue is, is that type of damage preventable?

CHAIRMAN CLUFF: Yes, it is.

COMMISSIONER FRATESSA: Let's have them in.

CHAIRMAN CLUFF: To a large degree. I can privately give you a lot of details about that, what we hadn't done yet.

But it might be useful to have a couple of PG&E's engineers come in and talk about some of it.

COMMISSIONER EBERLE: As far as on the communications, would it be helpful to get some public safety dispatch centers and see how they functioned during the earthquake, if they were overwhelmed, or 911, those types of things.

COMMISSIONER PEAK: You mean like a sheriff or the highway — the sheriff, highway, fire?

CHAIRMAN CLUFF: You know, the issue of communications — I think someone mentioned it earlier — but we ought to focus on that, because as Lyman Schaeffer explained in the PG&E drill that was held las June, the one observation I had, having participated in that, was that all of those telephones that they had committed, I said, "You'd better not plan on them working."

And was I surprised when I went into that command center a little while after the earthquake and found all of those telephone systems fully functional, and was I relieved!

But that system really wasn't tested, in my judgment. And I think we ought to focus on that, because PG&E, I think, responded extremely well. And part of that success had to do with the — I sit there in awe watching all of the decisions being made, just every minute. Had they not had access to that emergency system, that could have been a different story.

COMMISSIONER McCARTHY: Do we want to hear from the historical preservationists on this at some stage?

CHAIRMAN CLUFF: Yeah. That's probably appropriate for Oakland, don't you think, Tom? Or maybe back in San Francisco?

EXECUTIVE DIRECTOR TOBIN: Well, the Preservation Foundation Office, I believe, is in Oakland, isn't it? Yeah. I think they're headquartered in Oakland.

But, yes, I think we should. And Wayne Donaldson, who I think we've heard from before, is in San Diego, the meeting that I missed, the president of the State Historic Building Code Board. He would be a good person, hopefully, to speak to them, yeah.

COMMISSIONER UMEMOTO: Maybe possibly one of the small chamber of commerces or small businesses, representing the small business community, and maybe something in the direction of response on housing. What are we going to do with those that are —

COMMISSIONER FRATESSA: The homeless.

COMMISSIONER UMEMOTO: — the new homeless.

COMMISSIONER FRATESSA: Yeah. San Jose had old homeless. Now they have new homeless — or, not San Jose —Santa Cruz.

COMMISSIONER UMEMOTO: Santa Cruz.

CHAIRMAN CLUFF: Well, have we pretty much exhausted our ability to stick with it and feed the list of issues? I think we have.

VICE-CHAIR RIORDAN: We've done a good job.

EXECUTIVE DIRECTOR TOBIN: Well, we have — dinner is served, and the salads are wilting, and the ice cream is starting to melt, and the soup is cold, but it's — in the same location, Terry?

FROM THE AUDIENCE: Yes.

EXECUTIVE DIRECTOR TOBIN: The same location. They expected us, actually, about six minutes ago, even though they served the food 36 minutes ago.

CHAIRMAN CLUFF: I want to thank everyone for coming and spending the day.

The meeting is adjourned.

(Thereupon, at 6:37 p.m., the meeting was
adjourned.)

# California Seismic Safety Commission

## Loma Prieta Earthquake Public Hearing

## Oakland

November 8, 1989
Lakeside Park Garden Center
666 Bellevue
Oakland, California

Loma Prieta Earthquake Hearing
Oakland
November 8, 1989

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## PROCEEDINGS

CHAIRMAN CLUFF: Thank you.

I have a few comments to make in the opening remarks. And are there other commissioners that have some opening comments they'd like to make this morning?

(No response)

CHAIRMAN CLUFF: Okay.

We'd like to focus this Commission hearing on Oakland, since we are having these hearings throughout the area affected by the earthquake, and I thought it might be helpful — and I put in two slides in the projector to show you some maps that compile some of the data so the commissioners will have a feel for some of the effects, and particularly with respect to the effects here in Oakland.

So, can we turn the projector on?

(The following remarks were accompanied by a slide presentation.)

(Pause)

CHAIRMAN CLUFF: I think I only got two. I think I'll go stand up next to it.

Now, this is the base map of the San Francisco Bay Area, San Francisco, Oakland, San Jose, Monterey Bay, and Monterey (indicating), and showing the major faults. And I want to point out two or three specific things.

The epicenter of the earthquake is down here. And the aftershock sequence is along about a 50-kilometer length of the San Andreas Fault. And so, the energy that was released in this earthquake was down here. And so, in terms of high shaking, high intensity in shaking, the area in this region certainly received the greatest intensity of shaking. And I'll show you some close-ups of some of these later on.

The highest acceleration we know about right now is one right near San Francisco, .6 g's, or 64 percent of gravity.

The yellow dots with the red centers are areas where liquefaction occurred. And as one can see from this map, there are a lot of yellow dots up in the Oakland area. Since this meeting is focused on Oakland, I'll show the slide up here of San Francisco and Oakland.

The green are the rock sites, in terms of the intensity of the shaking, and the blue are soil sites. And in a general way, we've learned that site conditions play a big role in terms of amplifying rock motion. So, generally speaking, the blue numbers are always higher.

In San Francisco on the rock hills, you can see about — there's 12 percent, 9 percent, 6 percent, 8 percent of gravity within the city. And then, in the Financial District, the blue dots, 16 percent, 14 percent, and 11 percent. And depending upon the local site condition, one gets about a doubling or tripling of the rock motion in those — where we have those thick clays.

As you recall, Barry See addressed us in February, and he talked about this amplification aspect.

So, over in Oakland, up in the Berkeley hills, the Berkeley campus, we've got 8 percent, 12 percent, and the hospital in Berkeley at 6 percent, and a school, 10 percent — these are all rock or rock-like sites.

And then, out in the bay flats, then, you've got 26 percent, not too far from where we are, both of these — 26 is here (indicating), on the other side of the lake, 18 percent, and over at the Port of Oakland, 29 percent, and at Emeryville, 25 percent. So, we've got at least a two to three times amplification of the motion because of those local geologic and soil conditions.

The yellow and red are the areas where liquefaction occurred. There was extensive liquefaction in the Oakland Airport area, and varying degrees of liquefaction throughout the East Bay, not only in San Francisco.

And I think the important message here is this earthquake occurred — the energy release was somewhere between 80 and 100 kilometers to the southwest, so this is quite a distance for a magnitude 7 earthquake. The duration of the strong shaking in this area, from the recordings, was somewhere between 5 and 8 or 10 seconds, at the very most. And usually, in terms of liquefaction, you need several cycles of shaking to building up the pore pressures before the material liquefies. And in my judgment, all of these liquefaction points were just at the beginning of the liquefaction, and then the earthquake stopped, the pore pressure dissipated.

And so, in a longer duration earthquake, or an earthquake somewhat closer, on the Hayward Fault or the San Andreas Fault, these same locations, in my judgment, would have much more extensive and long-term liquefaction. And I think those kinds of things need to be appreciated.

Maybe, if there are any questions from the commissioners about some of the data on this — it's preliminary information from the California Division of Mines and Geology and the USGS in its Strong Motion program. And by the end of this week, I understand, we'll have the complete set of recordings, which will be in excess of 100 recordings that were certified.

LeRoy, do you have —

COMMISSIONER CRANDALL: Yeah, Lloyd, just a comment.

I'd like to express my appreciation, and hopefully that of the Commission, to the Strong Motion Instrumentation Program, who got these data out so rapidly. And our Strong Motion Instrumentation Program is going to pay off very, very heavily in this particular earthquake. We've got many instruments and recordings of building activity that will be useful in analyzing the behavior of these structures.

CHAIRMAN CLUFF: Okay. Well, thank you.

I just wanted to give that brief background so that we understand some of these intricate details that localized the damage at these great distances.

COMMISSIONER IWAN: Lloyd?

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: Just as a follow-up, maybe one other thing —

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: — to just comment on. You were mentioning the variety and the difference between the peak accelerations and the different types of soil conditions. And you might also mention the fact that the character of the motion tends to be different as well.

CHAIRMAN CLUFF: Right.

COMMISSIONER IWAN: And on the softer sites, we tend to see motion which is defined in the frequency range to usually be a rather narrow band of frequencies involved, which can often tune into the frequencies of a structure, or detune those frequencies. And so, special things happen on the soft site that we need to examine more carefully.

CHAIRMAN CLUFF: Thank you.

Any further comments at this time?

(No response)

CHAIRMAN CLUFF: Well, we're right on schedule.

And Lionel Wilson, Mayor of Oakland, we have here in the audience.

Welcome. We're very pleased to have to you here with us. We are here holding this hearing to try to find out what we can do as a Commission to help you in the City of Oakland, the citizens of the whole area affected, but for this day, particularly Oakland. And we would like to hear from you what your experience of the earthquake was in terms of what worked, what didn't work, how we as a Commission can help you prepare ourselves and mitigate some of these existing dangers that we know exist, so that when the Hayward Fault goes off, which is one that we're most concerned about, it won't be worse than this one.

And we're fearful that if we don't take some swift action, very quickly, we may have a real catastrophic disaster on our hand in the East Bay.

MAYOR WILSON: Mr. Chairman and members of the Commission, I think one of the things that was demonstrated to me was that preparedness is important and how important it is, and how important it is for the leadership of the respective communities that may be impacted by an earthquake. And we now know that it can happen at any time, and that it's unpredictable, and there's no way that — up to this point, where anyone can predict when such an earthquake will take place.

In the City of Oakland, we've had a disaster organization and with someone heading it up who is capable. And I found that — I was caught at Candlestick Park when the earthquake came, and it took us over four hours to get back to City Hall. So, in the meantime, by the time I arrived back to City Hall, it had already been closed down. I went in and looked around and didn't go up high, and then went and talked to our chief of police, who had a command post at 600 Washington Street.

And from there, I went on down to Cypress where we had people working in the command post, and from there, over to our — where our acting city manager had set up headquarters in our Fire Station Number 1, where our administrative headquarters of our fire station is located.

And I was very impressed by how well our little disaster organization had organized and had things well under control. When I arrived at the scene of the Cypress collapse, I found a captain of our fire department, our captain who is in charge of traffic normally, and an assistant fire chief there working, who took me aside and briefed me on what was going on, what was happening, and what they were doing.

And I might note that it was — that it was very rewarding to see the amount of support that was there already from surrounding communities, and which shows us that — some of us, some of our people, have criticized in the past for our early participation in problem areas where they occur around us, but it really paid off in terms of the reciprocal support that we received from the communities around us.

I think that the kind of educational information that you attempt to spread throughout our cities is vitally important. You can't do too much of it. I know that it's very difficult. We human beings somehow find it very difficult to prepare for something of this nature. There's something about us that it almost takes a tragedy such as we had here before people really comprehend the potential for disaster to any or a number of communities.

I believe that we as a city, it has been demonstrated, have an even greater obligation to prepare than the preparation that we have done. And I think we've learned from it. Although we had been inspecting buildings for some time, I think that this is something that, in a community such as ours, which is exposed to the Hayward Fault as well as the San Andreas, that we ought to have a permanent, ongoing inspection program of buildings, residential as well as commercial, in our city.

I think that we can — and in terms of setting up our requirements for building, also, I — as I slowly traveled through the city the day after the earthquake, it was particularly notable that, with probably one exception, those buildings which had been constructed within the past ten years showed very little signs of damage. And as it has turned out, there was extremely little damage to the newer buildings, even to the point where the panes weren't out of most of their windows, which would suggest that it is important to have and impose stringent rules and planning rules, in terms of how buildings are built in any community.

I think that — I know that we will be taking a good look at our program and our procedures, to be sure that we're doing everything that we can to — one, to stimulate the interest of the people in preparing and in protecting themselves. And obviously, there are ways — we can't completely forestall damage, but we can mitigate, and we can, by careful and thoughtful preparation, we can not only mitigate the extent of the damage, but also we can certainly mitigate the correlative consequences of an impact, in terms of how they damage property and injuries to people, people as well.

I don't know how helpful this is to you, in terms of your work, but I think that, if anything, I would point up the importance of the work that you do, and that you can't undersell what you're doing in terms of the value to those communities where the leadership are willing to listen and are willing to cooperate in programs which involve any advice or counsel that you might be able to — you might be able to give us, in terms of preparing.

We all know now that we don't know when these aftershocks are going to stop. I just came in late last night from Washington, D.C., to learn that we have had another one that was what? — 4? — at least a 4 on this Richter scale. And I suppose there is no way of predicting over what period of time or when you will get aftershocks.

And I know that, in terms of my own city, that I intend to urge our council and our staff to reinspect all of the buildings and all of the facilities, houses — whether they're housing or commercial — that we have already inspected, because just as a — without having any knowledge of engineering, but just as a practical matter, it would seem to me that when you have a long series of aftershocks such as we've had, that Building A, which might have survived the first one and the second one, and maybe up to the tenth one, but it could be having some impact. And down the line, some of those buildings that we have passed as being safe for occupation today, after the many aftershocks, may not be.

So, we intend to — in this city, to be ever-aware of the potential, and to try to do everything we can to protect our people and their property in the event of any more serious earthquakes.

CHAIRMAN CLUFF: Fine. Thank you very much.

Would you be willing to respond to a few questions from the commissioners?

MAYOR WILSON: Yes.

CHAIRMAN CLUFF: Thank you.

Commissioners?

LeRoy?

COMMISSIONER CRANDALL: Mr. Mayor, were there any problems with the utilities or fires? I didn't read of anything.

MAYOR WILSON: For the most part, we were — we didn't — no, we didn't have any problems with fires, nor did we have — there may have been minimal problems here and there, but in terms of any widespread problem with the utilities, no, we did not.

COMMISSIONER CRANDALL: Your water mains remained —

MAYOR WILSON: Other than the telephone for a while, and some of the — in some segments of the city, lights, electricity was out for a while. But even that wasn't for very long.

COMMISSIONER CRANDALL: Your water was still available for fire prevention and protection, if you needed it?

MAYOR WILSON: Yes.

CHAIRMAN CLUFF: Bill.

COMMISSIONER IWAN: Mr. Mayor, I wonder if you could just tell us a little bit about what kind of a mitigation program the City has for unreinforced masonry buildings. The Commission has been concerned about this for a long time. There's legislation now requiring governments to come up with a mitigation plan, and I'm not familiar with the plan that your city has. Could you just tell us what that plan is and how far along you are in looking at ways to mitigate against the hazard of unreinforced masonry buildings?

MAYOR WILSON: Well, I'm not the proper person to answer that, that question, I'm afraid, but I do know that we do have a mitigation program that we're engaging in. As to the details and specifics of it, I'm afraid I wouldn't be of much help to you.

COMMISSIONER IWAN: Thank you.

CHAIRMAN CLUFF: Bruce?

COMMISSIONER BOLT: I want to thank you very much for coming along, Mayor Wilson, after a trip east, to come along this morning early and speak to the Commission. We hear that City Hall is damaged to some extent, and I wondered if you'd tell us how this is affecting your ability and your administration's to carry on the work of the City. It must be a great difficulty for you.

MAYOR WILSON: Well, it's made it very difficult for us in some specific ways. In the first place, we had to find housing for a number of our departments, and we have done that on a temporary basis. And we haven't determined yet just what we will do from here in regard to providing permanent housing for all of our administrative functions, because we won't know for — I'm told, for about 60 days, finally what — just what we can and can't do with our City Hall, what the cost factors are going to be in terms of, if it is rehabilitatible, what is it going to cost us.

I read this morning where some of the state and federal people had been in yesterday — had yesterday concluded that it could be rehabilitated, but probably at extensive cost. But that's just preliminary, and I'm told it'll be, well, 60 days before we really know just what we can do.

I know there's a strong feeling on the council that if it's at all possible, that we would like to use it. It's a beautiful building with a lot of history and a lot of tradition there, beautiful chambers. So, if it's at all possible within the framework of economic viability, I'm sure that we will be doing everything we can to lean in that direction.

COMMISSIONER BOLT: Thank you.

CHAIRMAN CLUFF: Mr. Mayor, let me add to Commissioner Bolt's question.

Our Commission has been concerned since its creation, but particularly over the last year or so, about looking at acceptable risk and acceptable levels of safety, and the process that one goes through to decide what a level of — what level of earthquake safety one would like to achieve, and then whether or not you can afford it, brings along quite a few tradeoffs and agonizing discussions over that.

Could you tell us what the process is? Or do you have a process of trying to assess levels of risk that you're willing to accept?

It seems to me, with the City Hall, that earthquake occurring about 100 kilometers away, 80 to 100 kilometers away, that really wasn't tested under the earthquake that we're most worried about. And given that earthquake occurring, it would seem to me that we have accepted some level of risk that maybe is now, in the after-event, unacceptable. And how — what process do you use to try to establish what levels of safety you'd like to achieve, and then pay for it?

MAYOR WILSON: Well, we have engineers in our Public Works Department who, on an ongoing basis, examine the City

Hall, because of some years — not too many years ago, someone's study suggested that it was not earthquake-proof, whatever that is. And the — so, we have been using it, all but a few of the very top floors.

What was an acceptable risk, even before now, the last series of earthquakes, as you indicate, may well not be an acceptable risk — acceptable risk now, particularly since we've had a little rumble from Hayward, just to let us know it's there, I suppose, and what the — to remind us of what the potential is and could be.

So, our Public Works Department — we do all the work that we can in the City, in-house, within our departments, and when we reach a point where the expertise, the level of expertise, say, in our Public Works Department in this instance, feels that it has gone as far as it can go in terms of making the kind of evaluation that's necessary, then we contract with experts who are in a position to take it beyond that and give us more precise and more extensive information in terms of how we ought to — what the proper evaluation we ought to be making upon it.

From there, it would go to the city manager's office, whatever recommendation was made, who would then submit a report to the city council. When it came to the city council, it would go to one of our committees for review.

And we're a city in which we involve people in the community very much in the decision-making process. So, at the point where we were trying to determine what was reasonable and what was unreasonable in terms of usage, we would take the information provided by the experts and assign it to a committee, where we would have open, public hearings, and let people come in and express themselves. And thereafter, the council would make a decision as a matter of policy.

CHAIRMAN CLUFF: So, it is — the final authority is the city council, and they —

MAYOR WILSON: The final authority.

CHAIRMAN CLUFF: — would make the judgment on risk.

MAYOR WILSON: That is correct, yes.

CHAIRMAN CLUFF: Thank you very much.

Yes, Dan?

COMMISSIONER EBERLE: Mr. Mayor, you mentioned the other communities that — surrounding communities that provided assistance, and complimented them on it, and mentioned that it also showed the need for communities working together. Do you intend to work with those other communities in future preparedness efforts, counties and the other cities in the county?

MAYOR WILSON: Well, we recognize that earthquakes are unpredictable as to the direction in which they go. And just as in this one, it was very interesting to note where the damage was and how even it seemed to hit — I don't know — my wife contends it came from the sea — but it came across, and here was our Capwell's Emporium, which was hit harder than most of the buildings downtown. And then we saw other damage to buildings in that line, right on down to the Cypress Freeway.

I don't know — no one — I don't think we're in a position — no one is in a position to determine whether it was the intensity or whether it was a weakness — intensity of the quake, that part that it struck or whether — at Cypress, or whether it was a weakness in the structure itself that lent itself to the kind of damage that we saw there.

We — I have been interested in collaborating with surrounding communities for some time, on other matters as well as earthquakes — transportation, of course, which has become so critical, and which problem, obviously, is so aggravated at a time when you have an earthquake or some natural disaster of this kind.

And I think that it's going to be more and more important that regions — that units of government within regions collaborate with themselves, communicate, and have some mechanism, as loose as it may be, but some mechanism whereby they can communicate, cooperate, and be of mutual assistance to each other.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Further questions? Stan?

COMMISSIONER SCOTT: Thank you.

Mayor Wilson, I'd just like to go back to the City Hall momentarily. You mentioned that some years ago, there was a study that suggested it might not be earthquake-proof. Of course, earthquake-proof may be too severe a criteria, because maybe nothing is really earthquake-proof. But could you make any other comments about that study?

And then, and just for my own benefit, just correct my own recollections — my recollection — I'm a lay member of this

Commission, not an engineer — but it's been my impression for many, many years, the sort of conventional wisdom was that the Oakland City Hall was not really a safe building with respect to seismic concern.

And as a matter of fact, I remember being in it at least twenty years ago, and probably somewhat longer — maybe 25, when the then city engineer said to a small group of us there — just a little discussion group, but somehow earthquakes came up, and he just remarked, "Well, this isn't — in my estimation, this is not — this is not the place to be the next time a real earthquake hits." But, he just sort of implied, "But I just don't know when we're going to get around to doing something about it."

And I just wondered if you would comment. Has it been generally understood or widely believed for quite a while that there were problems with that building?

MAYOR WILSON: Yes. Yes.

See, we were aware that there were some problems. We didn't have a clear definition of the problem and the extent of the problem. It wasn't really clear to any of us, and I discussed this with our public works director who is, I believe, is a person of a great talent and very bright. And it was — he felt — and we were preparing to do this — to get another — to go into a more intensive examination and re-examination of the City Hall. We were just planning that just before this quake struck.

COMMISSIONER SCOTT: Thank you.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yes.

Mayor, you did indicate that you were reducing the use in the City Hall already, right? I mean, the occupancy, you had already — there were already some offices that weren't being used.

MAYOR WILSON: Well, there's no — no one — it's not occupied now.

COMMISSIONER PESTOR: But I mean before the earthquake. You were already beginning to reduce the risk.

MAYOR WILSON: Yes. We were occupying all but maybe the very top, one or two top floors.

COMMISSIONER PESTOR: Right.

MAYOR WILSON: And, of course, from my discussions with the fire chief, his major concern was how do we get — "How am I going to get the people" — even in the floors, the ten floors that we were using — "How am I going to get the people out in the event of some kind of a natural disaster or quake of some kind?," because those elevators are of questionable functionality in any event, and they — the stairways are so narrow that employees would have to use.

And that's one of the reasons we were speeding up our determination to get a re-examination and decide just what we could and couldn't — what we ought to be doing with the City Hall, because, after talking to him, I walked a little through the stairways, and it would be extremely difficult to try to get people out, if it was necessary, through those stairways.

COMMISSIONER PESTOR: One comment. I think most people are probably aware that Oakland is really, you know, financially strapped. And in the Assembly and the Senator, Senator Torres and Assemblyman Cortese have both carried bills for — actually, a $1 billion bond for state and local buildings. Do you think, if they're successful in getting that through this year, that there should be some provisions in any bond bill like that giving preference to cities like Oakland that are having, you know, severe financial problems?

MAYOR WILSON: Hopefully so.

Now, there's another factor that we had to face also that hasn't been discussed, or I haven't even seen it noted, that — you may recall that a few years ago — well, you probably — the press didn't carry how it started, but a few years ago, in a council meeting, the city manager recommended to the council that we would have to take down our — what was then our auditorium, over by the lake. And I asked him what kind of usage there was, and he said, "Well, over 400 community-based organizations a year use it." And I said, "Well, you're not going to take it down. Find the way to raise the money to take care of it."

And that was — it was out of that that the city manager got together with some bond people, and they developed this sale and lease-back program, which was not new in private industry, but publicly it had never been used. And from then on — so, we sold our museum and our convention center and lease them back, and with those funds we were able to rehabilitate that auditorium. And it's highly functional and it gets an awful lot of use. And it's now called the Henry J. Kaiser part of our convention program.

But the point is, is that when we found we were successful with that, that we continued to move with that program. Studies by the Assembly Research Committee had determined that Oakland was harder hit by Prop 13 than any of twenty cities in the state, and so we just had to find —be creative in terms of maintaining the financial and economic viability of our city.

So, anyway, to shorten this, we ultimately — we sold everything in sight under a sale and lease-back, and the auditorium — I mean — the City Hall was one of them. So, that's under a sale and lease-back program, and I'm not sure that we could take it down without paying off those bonds.

CHAIRMAN CLUFF: Well, Mr. Mayor, we need to move on with our schedule. We want to thank you for taking your time from your busy schedule, and we wish you well. And any assistance that the Seismic Safety Commission can give you, please do not hesitate to call on us.

MAYOR WILSON: Thank you very much.

CHAIRMAN CLUFF: The next presentation will be from the president and CEO of Cellular One, Don Harris.

While he's coming up to the table with the microphone, I'd like to comment that when earthquakes occur anywhere in the world, we, from the Commission and other organizations, send members to investigate those earthquakes, to see what we can learn. Now the earthquake is here, and in the audience is a group from Taiwan of scientists and engineers that are here to study our earthquake, to see what they can learn to bring back information to their country. And we welcome those persons from Taiwan.

Thank you for being here.

So, Don Harris, president and CEO of Cellular One.

MR. HARRIS: Thank you, sir.

Let me introduce who's with me. First is the senior engineer at Cellular One, and this is the man that kept our system playing throughout the earthquake, including redeploying all the assets we needed to to provide service with the new traffic patterns and some of the emergency situations that existed; and Carolyn Casey, who's with our marketing department, and she functioned as our chief information officer during the quake, and probably knows a little bit about everything in all departments. And I'll call on them to answer questions or make comments as we go through.

(The following remarks were accompanied

by a slide presentation.)

MR. HARRIS: Let me just start by reminding everybody that the Federal Communications Commission granted licenses to two cellular carriers in the Bay Area. One is Cellular One, and the other one being GTE. Cellular One is 61 percent owned by Pacific Telesis, 33 percent by McCaw, and 6 percent owned by Associated Communications. Of course, all three of those companies are heavily involved in telecommunications.

A cellular system, and the one that we have in the Bay Area, is actually 67 transmitter sites roughly set up in what are called honeycombs or cells. As you travel around the area using a cellular phone, either from your car or a portable like I have, you talk to one of those sites, and those sites are subsequently interconnected to an MTSO, mobile telephone switching office, which is actually located right across from City Hall, in a building that survived the earthquake quite well. In fact, it's right above the mayor's office.

Next slide.

These are pretty simple schematics, done for a general manager like myself. If there are more technical questions, please feel free to ask. But let me just frame what it is that happens during a cellular call.

That is a car with a cellular antenna. And when you place a call, you talk to one of those transmitters that I just described, one of the 67 in the Bay Area. From that transmitter, you then go to the MTSO in Oakland, and that path there is one — is the critical path. We connect each of those cell sites by one of two means, either by our own microwave system or by Pac Bell facilities. And all of the failures we had in cell sites, except for one, were the result of the failure of that link.

From the MTSO — it's really the brains of the system. It figures out where your call should go. If it's going to another cellular call, it goes back over the path it just came through to the appropriate cell site. If it's going to any land line phone, whether it's in the Bay Area or in Detroit, it goes over to the PSTN, the Pac Bell building right across the street. And that facility stayed up the entire time of the quake. There were no problems there whatsoever.

Once you got to the PSTN, to Pac Bell, their facilities they'll talk about, but there was some congestion there also. A lot of times, you might have tried to call out and were told, "All circuits are busy." When you got that recording, "All circuits are busy," you've gotten through our system. You were handed off correctly to Pacific Bell, and at that point you've reached congestion. And that did happen to some extent.

The highlight here is the Cellular One system ends at the MTSO if you're not calling another cellular phone.

And just to make that clear, again, here's a cellular-to-cellular call. It's totally within our system, and we don't need to go to Pacific Bell or any of the long-distance carriers to complete the call. We do that all ourselves. There were a lot of those types of calls during the quake.

And we can probably — we've covered this. The leased line, or the microwave, again, that portion we'll get back to. I think everybody understands it. So, when I talk where we failed, I'll cover in detail what happened.

Go on to the next slide. We'll go through the slides first.

Carolyn, let's start by setting up the skeleton of this.

It's a little bit out of focus, but I think everybody can see.

Along the lefthand axis, it says "Percent of Cells Operational," and then we have 67 cells, and the top of that slide is 100 percent. And along the bottom axis, the x-axis, is the time of day. And what we've done is plotted, starting at five o'clock, the status of our system throughout the quake.

And at five o'clock, we were perfect, all 67 cells operating. By 6:00 p.m., 1800 hours, we had 18 cells down. Now, that's 18 of the 67 within — yes, within that hour. Two cells sites ended up actually being destroyed. One was at the St. Joseph's Seminary in Los Altos, and the other one was at the Watsonville — I forget the name of the hotel, but those two sites were physically destroyed.

As you can see, going from 1800, or 6:00 p.m., to 7:00 p.m., 8 came back up. Those are all the results of Pacific Bell circuits that I just talked about, in between our antennas and our MTSO coming back up. And again, between 10:00 to 9:00 p.m., you see we had a degradation going from 8 to 9, back down to 14 sites out, 13 sites out, and then up to 9 sites out. All of those were, again, the result of Pacific Bell bringing up circuits, bringing them back down, and sorting out what they needed to do to recover from the quake. Those were all failures besides the two sites I mentioned, all failures in between the MTSO and the antenna site.

By eleven o'clock that night, we had all sites operating but 9. That's 86 percent capacity. And the remaining sites were brought up during the next — virtually, during the next 16 hours. And they were a process of getting our engineers out to the site. Most of these outages, what took us from 9 up to 6 and then to 5, were our microwave outages. And what happens on microwave is when the paths are shook, when the two big dishes are shaken enough and they no longer see each other, they shut themselves down. And in some cases, we can bring them back up automatically; in some cases, we had to go back out to the site to make sure they were lined up.

In fact, by the next morning at 8:00 p.m. (sic), the only sites we had out were the two that were destroyed and then two more. The sites were fine, but the microwave path needed a complete overhaul. That site was at a mountain called Chule, which is a stone's throw from Loma Prieta. And so, that got shaken so badly we had to physically go up there.

It actually took us two days. It took us the first day to get a helicopter to fly — they'd only fly in daylight up there, and it's a site we have to fly up to — and then to assess the damage, and a second day to fly back up with the parts we needed to fix it. And if we continued this slide another 24 hours, we would have had everything back up but the sites that were destroyed.

So, essentially, the cellular system came through the quake pretty well. All the sites are built with earthquake bracing. We plan for it, we want to survive earthquakes, and I think we did fairly well.

But what does this mean for the system, because we understand there may be some concern that people couldn't use the cellular system? Well, let me just say for the record, people used the heck out of our cellular system.

And let me go through this slide. Again, it's thousands of calls per hour, on the lefthand side. And on the bottom is the time of day, again, military time — you guys are pretty serious.

But it starts this time at 1500 to 1600, 3:00 p.m. to 4:00 p.m., our busiest hour of the day — and hopefully, nobody from GTE is here — generally, and we process 35,000 calls in that hour. If, at 3:00 p.m., you hit the "send" button on your cellular phone, 99 and a half times out of 100, you'll get through.

At 1700 hours, or five o'clock — two over — we had, as we showed, 18 cell sites down, only 75 percent of our system operating. And cellular phones became very popular. Even at that capacity level, we completed 84,000 calls.

And what that meant was, you probably had to hit your "send" button three times to get through. But for those of you silly people that still don't yet have a cellular phone, all you need to do is hit "send," and if you don't have something, you hit the "end" button. You hit "send" again, if you don't have something, hit the "end" button. You hit "send," and voila, you've not got your call through.

I myself called my wife on her cellular phone at 5:15 and got through with no problem, and then called my parents at 5:20 in Florida and got through with no problem.

But what happened, as you can see in the remaining hours, is we've seen traffic like we've never seen before, well above being able to supply our design at 99 and a half times out of 100, you'll get through. And, of course, this facility was down, and it was that much tougher. But there were still a lot of phone calls going on.

The other phenomenon that we saw during this timeframe that might have made it a wee bit difficult to get through was, once you people got through, they tended not to get off. There are actually — Brian's tracking it — but there are literally thousands of calls that extended an hour or more. So, you know, people just said, "Listen, I've got a connection and I'm afraid I can't get it back, so I'm never going to hang up." That makes it a little tough for us to process more calls over the same channels.

What else happened shortly after the quake, we made a decision to hand out phones to any emergency services group that came to our door. We asked the state for priorities, and they said use our good common sense, and so I think we did. We had plenty of portable and transportable phones. The cellular industry as a whole, nationwide, responded well. There were people that couldn't get through to us because of the congestion on the telephone systems, but guessed at what we needed, and one of the things they guessed we needed were portable phones. And they started arriving at the Oakland Airport.

The first group arrived from McCaw at around 10:00 p.m. So, these were people that just said, "My gosh, the Bay Area needs help. Let's send them whatever we need."

And I'll talk a little bit more about some of the other facilities we had roll in, in a little bit.

And as you can see, we set up two, and then later, three points of delivery, one in Burlingame, one in San Francisco, and one right here in Oakland, and we handed out — Carolyn, you probably know better than I do — 3,000 phones?

MS. CASEY: Over 2,000.

MR. HARRIS: Over 2,000.

COMMISSIONER CRANDALL: Were these loaners?

MR. HARRIS: Absolute loaners. We did two things — and I applaud, again, all the commissions. One is, we told the FCC that in areas like Santa Cruz where there was significant damage, we would take some of our signal and point it in there. And we had coordinated it so we wouldn't interfere. And we also told the PUC that we were going to hand out phones to any emergency agency, and that we would file a retroactive tariff that said it was free, at the expense of Cellular One. And both of those entities said, "Fine."

So, you know, it was almost a done deal before the officials knew about it, but the officials supported us completely.

Okay. Let me talk about a few things — if you could put up the next slide, Carolyn, in this one, with the cell site sectors. Yeah.

A few things we could use — and, of course, this is chart is self-explanatory, but I'll walk you through it anyway. On the lefthand side is traffic measured in something the engineers call erlangs. And let's just — let's just call it the amount of people trying to get on a particular cell site.

And along the bottom, Numbers 1 to 10, those are actually ten — and I'm not going to go through all 67 — those are ten of our cell sites. And then you see a couple different 1's, and three Number 2's. Each cell site has in it what is called a sector. And the Sectors 1 and 2 are the ones we're going to focus on. The green line, the bottom line, is the average traffic the day before the earthquake, on those specific cell sites and their sectors.

The red line is what happened the hours after the quake, in terms of people demanding those sectors. And the blue line is the current configuration.

And the blue line is more interesting. That's something that we're kind of rummaging through now.

The earthquake has, from our perspective, significantly changed the usage patterns of cellular phones. And we'll fix that down the road.

But the key there is the red line. And the Sites 1 and 2 cover a place in San Francisco called the Marina. And I will freely admit that those cell sites ran out of gas by about 5:30. And what we could use for help is, we have a lot of assets we can redeploy. For example, we have sites facing the Bay Bridge we could have directed towards the Marina by 5:30, maybe, at the latest. And we had radios in storage in warehouse that we keep for inventory purposes that we'd immediately put in the field, if we knew where to put them.

What we had to do is sit back and watch the system and figure out where the emergency services were demanding it. And I recognize we're not a priority, and we certainly don't need any details, but if we just have a sense that there are going to be three hot spots for cellular service, and if somebody had just said the Marina and the Cypress structure, we would have been a little bit quicker in getting a little bit more capacity to those areas where we ran out.

As it was, we were able to, I think, by later in the day, handle most of the additional demand in those specific areas.

The other thing we could use some help on, if we have a map — and you're not going to be able to see this, but if, after the meeting you want to come up — here's all 67 of our sites plotted in red. In yellow you're going to see three temporary — excuse me — four temporary sites that we available to deploy. And we had these four sites on the ground and operating 72 hours after the quake hit.

The key delay there was, although the California Highway Patrol helped us as best they could — and again, I recognize we're certainly not an emergency service — but these cell sites that we try and bring into an area that's now a hot spot are oversized — require oversized vehicles and require coordination with the California Highway Patrol. And if we could, in the scheme of things, be given a little bit better priority at times — and I'm not saying it wasn't the perfect priority — but I'm just saying it took us that amount of time to do it. We even had an aircraft standing by to carry equipment in, but we ended up having to coordinate with the Sixth Army for air space over San Francisco. And again, I recognize that that's surely the best way to do it.

But from our prospective, you know, we've got assets we're waiting to deploy. We had Pac Tel and Erickson and McCaw send us enough assets to deploy at least 300 percent more than we did. In fact, at one point, en route to Northern California, we had 14 15-kilowatt generators — yeah, 15 generators. And we actually had them holding in areas outside of the Bay Area. And we didn't need them, so we went back to some of the emergency services and said, "Do you guys need any generators?" And again, it would have been something that — we end up with a lot of assets during these quakes, and assets we need to redeploy. If somewhere in the scheme of things we can give some priority to redeploy our stuff, we'd appreciate it.

And that's about it. The only other area I at first was suspicious of was, "Hand-out phones to whoever you feel needs them," because I had a great fear we'd run out. But that process worked pretty well. You trusted the judgment of Cellular One to give the phones to those emergency services, and we did. But if there is a priority you'd like us to hand equipment out to, and if this ever happens again, of course, we'll give it away for free. And if there is a priority and you let us know in advance, then if we do, for some reason — if there's a worse calamity than this — run a little short on assets and you want us to limit who gets what, we'd like to know that. For now, we gave everybody everything they needed. But who knows, if there's something worse.

I guess that summarizes it. Again, the Cellular One system never went down. We did lose some cell sites. Some of you were probably inconvenienced because everybody was trying to use the system. And we did the best we could to reconfigure — and probably the first time this guy slept in weeks was last night — as many assets as we could to supply the service you needed.

And now we're prepared to take any questions.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: I think I heard something, but just — comparing — I have a cellular phone in my hand, and if I'm going to phone somebody else in the Pac Bell system — I think those were the percentages of getting through you were telling me — is it different percentages of getting through a number of times I dial if I'm dialing somebody else on a cellular phone? So cellular phone to cellular phone versus cellular phone to Pac Bell?

MR. HARRIS: Yeah, the — and Brian, I'll let you get specific. But the first question is the 99 and a half percent you were admitted to our switch at the MTSO, and then we handed you to Pac Tel — I consider that a success, because there's nothing I can do about the Tel Co facilities I hand you off to.

If you were within our system, then the person receiving it had another 99 and a half percent chance of getting it. So, you'd multiply the two, and that would have been your probability of getting through, had you gone from a cellular phone to another cellular phone. And there might be some other statistics you have.

COMMISSIONER FRATESSA: Let me tell you why I was asking the question. We've heard communication is an issue, and if there's a higher percentage of talking cellular phone to cellular phone, then we need to know that.

MR. MONTGOMERY: Yeah. I think a lot of what people experience in terms of not being able to get through was congestion on the land line network as well as on ours. We have — one of the limiting factors in cellular is the amount of frequencies that we can have available. And we try to make all available that we can. I'd say that mobile-to-mobile or cellular-to-cellular calls had a higher likelihood of being completed, just because we had control of it. And the — you know, the Pacific Bell facilities at that point were involved.

CHAIRMAN CLUFF: Barbara, you had a —

VICE-CHAIR RIORDAN: Yes.

Let me just say that I'm impressed with the system that you had here and the back-up that you had.

Some of us on the Commission are from Southern California, and I would be interested to know what your counterpart is in Southern California, because I see this as a real key to, perhaps, the communication needed after a major event. And I would be interested in knowing what system is available in Southern California.

MR. HARRIS: Well, all cities in California are going to have two operators. In Southern California, in Los Angeles, you have Pacific Telesis and you have the Lend Broadcasting Consortium. I don't know if — any day now, they'll either belong to Bell South or McCaw — but, anyway, there are two carriers down there supplying cellular service.

And the status of their systems, I'm not as familiar with.

There is — if I can get back, there is one point that we are working on that became apparent to us, is working with the manufacturers to determine priority numbers. There is a way to tell the system that certain numbers have a right to get on. And if there are other numbers already on the system that don't have this right, then you can drop them off and insert the person that has this priority.

It is in the system that we have. The Erickson system, unfortunately, it was very easy to violate, by the people that distribute cellular phones. So, there are literally tens of thousands of people that were getting phones early on that were being considered priority customers. And so, there was no way to really determine priority customers from people that had fooled the software of the system. And it's something we're working with our manufacturer on now, to come up with some software that's foolproof.

And we can come back and say, "Okay, the following state agencies" — and there are many, many phones for state agencies — "tell us if you want these to be priority numbers, and we'll make them so." And then also, we'll have numbers similar to that that we do hand out, along with the phones. You know it's a priority phone. And if we want, we can make it so that the state has a much better chance, or any of the emergency services you so designate, have a much better chance of getting through.

It's almost their private system. Now, if they all get on and fill the system up and don't get off the phones, then we're stuck. But we can do that.

CHAIRMAN CLUFF: A couple of other questions.

I think LeRoy had one.

COMMISSIONER CRANDALL: Yeah. The figures you quoted regarding completion of calls within the system, was that within your own system or between cellular systems? How did it function there?

MR. MONTGOMERY: Yeah. The number of calls that we showed you here were calls that were recorded by our system billing tapes, our call record. They could have been any number or kind of calls. They could have been calls long distance, calls within our system, just a collection of calls.

COMMISSIONER CRANDALL: It wasn't exclusively, then, within your — calls within your system, sending and receiving, that you're talking about.

MR. MONTGOMERY: They were Cellular One only. I mean, they were originated on our system, yes.

COMMISSIONER CRANDALL: Yeah. Right. Right.

MR. MONTGOMERY: Okay.

COMMISSIONER CRANDALL: I understand that.

MR. MONTGOMERY: Okay.

COMMISSIONER CRANDALL: They could have gone anywhere.

MR. MONTGOMERY: Could have gone anywhere, exactly.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: When you lose a cell — and I think that you can almost anticipate, in this kind of an emergency, you're going to lose some — do the adjoining cells have the capability of taking over from a cell that's down, or do you have to move the mobile unit into that?

MR. MONTGOMERY: That's a very good point. In cellular, you have the ability — it's a function we call directed retry. It's unique to cellular, in that since you have overlapping coverage areas, if you do lose a portion of the main serving area, let's say, or main serving cell site, you do have several other cells that will fill in the gap or fill in the hole. Those cells can then take that traffic, so you do have that functionaltiy.

MR. HARRIS: Yeah. There are very few unique spots where we have only one cell covering it. The Caldecott Tunnel is an example. It was — it's a fortuitous piece of terrain that allows us to give you coverage through the tunnel, and that's the only site we know of in Northern California that would do it. So, if that site goes out, there's no other sites that can give you the Caldecott Tunnel, but we can make up the difference almost everywhere else.

CHAIRMAN CLUFF: Bruce, you have a question?

COMMISSIONER BOLT: Yes. Thanks, Mr. Chairman.

I must say that your actions in the public interest are very commendable. I'm most impressed. This is what sort of makes the community work in these tragic events.

I'm not quite clear about the status of Cellular One. Is is a monopoly of this kind of service in the Bay Area, or are there other companies that offer this service? That's just a factual question, I want to say.

But I'd also like to comment on your appeal for a way for you to know where the most damaged places are, so that you can react. I guess you are in touch with the Office of Emergency Services. It would seem to me that it's in your interest, as you say, and certainly in theirs — in all our interests — if you could establish some very close working relation, because I think they really have the responsibility in the state to be able to tell you that, and to tell it to you pronto. And so, I hope that we can something to cement that connection.

CHAIRMAN CLUFF: Tom, you had a question.

COMMISSIONER BOLT: Can you give a quick answer to that?

MR. HARRIS: A couple points. One is, there are two licensed carriers, GTE and ourselves. And then, under each of those licensed carriers, there are several resellers of cellular service in the Bay Area. So it's — on a carrier level, it's a duopoly. At the supplier of service level, it is somewhere closer to a fully competitive business.

COMMISSIONER BOLT: If I could understand that, then, there is another system which has also towers and which was also in operation during the — of course, during the emergency?

MR. HARRIS: I think it was.

CHAIRMAN CLUFF: Tom, you had a question.

Oh, I'm sorry. Yes, Will.

COMMISSIONER PEAK: I was going to ask what the coverage was in your system in the rather remote and mountainous area which was quite damaged around the epicenter, down between, say, Los Gatos and Santa Cruz. Do you have any information on that?

MR. MONTGOMERY: Well, like you say, it's very mountainous, and we can demonstrate on the map here where the site actually is. There is a site right on Loma Prieta. It's very difficult to cover into these — into this area, and something that we hadn't engineered and planned on covering. There's no cause to really cover that.

Santa Cruz, however, does have a system that we switch. They had — part of their coverage is from Loma Prieta, and they have cells in the downtown area and some coverage along Highway 17. The Santa Cruz licensed carrier is responsible for getting service in that area. They have since turned on another cell site close to the summit, on Highway 17, to aid in some of the communication relief there.

COMMISSIONER PEAK: If I can carry that a little further, one reason I brought that up, in talking to Safety of Dams about their work in that area, they stated that the cellular system, the interlock must have worked, because the cellular system was of much greater value to them than the state radio system, which is a long-standing thirty or forty year old system that the state provides.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Just a quick question. Would you speculate, just momentarily, on what might happen in the event of another quake that shook much more strongly up in these parts of the Bay Area? Of your 67 sites, I mean, are you reasonably confident of their earthquake resistance? Are you going to be taking kind of another look, in the light of this recent October 17th experience?

MR. HARRIS: I think we're going to keep earthquake resistance foremost in our mind. It was there before.

All our sites are built with the earthquake bracing required. Where we had a failure of a site wasn't our cell site. It was the structure we're in. And that's the only such structure I know of in our system. The rest of the structures that we look at, we specifically, and with a new degree of urgency, are going to look at in the future, the basic building we put the site in, to make sure that that's safe.

Again, as I mentioned, the switch — that was an extensive review done by third-party engineers and seismologists before the switch was put across the street from City Hall. And they said that's one of the best buildings to be in.

We're also going to build a facility next year in Santa Clara that will house a switch and will also have a back-up capability. And we had always planned and budgeted that to be an earthquake-proof building. And we will be doubly sure that we fulfill that.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: On your two points that you talked about, the areas you need help — that's in identifying the hot spots and also getting help with your temporary site locations and bringing your oversized vehicles in, do you intend to work with the local areas, the governments too, in order to maybe develop some sort of agreements in advance to help you out in doing those things?

MR. MONTGOMERY: At this point we have, through this recent experience, developed better ties with our neighboring systems for assistance. We had a lot of support from Sacramento, Los Angeles, Fresno area, and local — the local governments or communities have been very helpful.

We don't really have any plans in place at this point, I would say, to deploy equipment any quicker than we could have. I'd say that we all reacted and acted very favorably, and I expect that that would continue if it happened again.

MR. HARRIS: You make a great point, and I think we might want to formalize that. Again, at both the state level — just to make sure that it's clear — and at the local level, we did get enormous support. But it wasn't formalized, and I think maybe if we do that, we'll be in a little bit better position next time.

CHAIRMAN CLUFF: I think, Randy, you had a question.

COMMISSIONER PESTOR: Yeah. Who's your competitor in the Bay Area now?

MR. HARRIS: GTE.

COMMISSIONER PESTOR: Okay. If I have a Cellular One unit and you have a GTE unit, and, you know, the circumstances were what you had on the screen there, you know, right after an earthquake, would I still have that 98 and a half percent probability of getting through to you if you had the GTE system, or could it go down? Do you know? I mean, is there a consistent —

MR. HARRIS: I don't know what the GTE system is designed to, but it's whatever their system is designed to. And then, the moment they hand it to us, either — in this case, it would be at the MTSO — I can guarantee it from the MTSO to your phone, in this case, since that was a GTE customer.

I can guarantee — you know, in emergencies, I can't guarantee anything — let me take that back. Normally, you get a 99 and a half percent chance, if somebody was able to get to the MTSO by cellular phone or long distance call or local call, that I can get to you.

So, again, a GTE system to our MTSO is a statistic I don't know. And again, in the cases of earthquakes, when facilities go down, everybody tries to make a call, and when they make a call, they stay on the phone. Then the probability falls off significantly.

COMMISSIONER PESTOR: So, again, if you had a Cellular One phone from GTE, it might — those percentages might differ.

Okay. If the state was going to have a policy of having cellular telephones as a communications mechanism, would you recommend that there be one company handling that for a certain area? Let's say the state was going to contract, you know, and set this up. Would there be a better — you know, a better percentage —

MR. HARRIS: Yeah.

COMMISSIONER PESTOR: — if they contracted with one company, so you wouldn't have a lot of —

MR. HARRIS: You shouldn't ask a businessman that question.

COMMISSIONER PESTOR: Yeah.

MR. HARRIS: But what you really want to do, in the interests of the state, I think, is diversify as much as possible.

In any given incident, there's no telling which system — and whether it be Pac Bell or our cellular system or GTE's cellular system — it's going to suffer more or less damage. And so, having the ability to use them all and then taking which one seemed to be the best — hopefully, all of them — from a state perspective, I think that would be the way to go.

CHAIRMAN CLUFF: We need to move along. We're behind schedule.

Ten seconds. Go ahead, Paul.

COMMISSIONER FRATESSA: Do you know if your buildings are designed under the provisions of the Uniform Building Code for essential facilities?

MR. MONTGOMERY: Yes.

COMMISSIONER FRATESSA: They are?

MR. MONTGOMERY: Yes.

COMMISSIONER FRATESSA: Thank you.

CHAIRMAN CLUFF: Thank you. We need to move on.

Jerry Sinn, with Emergency Operations, Pacific Bell, continuing with the communications, is here to talk to us.

And welcome to our hearing, and you have a few minutes to give us a short presentation, and then we'd like to follow with questions.

MR. SINN: Yeah. I'd planned on about maybe fifteen minutes of comment and then questions that you want to ask after that.

My normal role with Pacific Bell is that of division manager for interoffice operations for the Northern California area. And I'm basically responsible for the interconnecting networks between your central offices. During an emergency situation, I have the additional role of chairing the Emergency Operating Committee, or the team that's responsible for coordinating restoration activities in the Bay Area.

You have to excuse my voice. I have a sore throat, and I'm just trying to get over this cold. I'll try to keep it as clear as possible.

We basically have put a structure in place throughout Pacific Bell, but I'll talk about the Bay Area in specific terms, for dealing with emergency situations or abnormal conditions.

The structure we have set up in the Bay is an area-wide operating emergency operations team that functions out of our San Ramon facilities. In addition to that, we have area teams in the various geographies around the Bay Area, specifically San Francisco, Oakland, Concord, San Jose, and in the case of this situation, also Salinas, that are responsible for the actual physical restoration of facilities and equipment.

The role of the sector team that I chair is to coordinate resource allocation and restoration activities when you have a situation occur that involves more than one of the specific geographical areas and will require resources beyond their normal capability. And that's exactly what we put into effect on the 17th, following the quake.

The quake occurred at approximately 5:04 p.m., and by 5:30, we had activated our control centers at San Ramon, we had our control center in Oakland and San Jose activated, and a temporary center in San Francisco activated, and shortly after that, Salinas.

Those — the emergency operating team is constituted by certain experts in engineering, real estate, building engineering, power, power maintenance, technical support type people, as well as medical people, media people, marketing, et cetera. All of the functions of the business are represented there. And we serve as an overall resource available to our field restoration teams.

We also have established formal linkages with the state OES and county OES organizations and many city governments. In fact, we've gone as far as that we have shortwave radio communication contact with them as well as private line, land line facilities, and network connections with all of those agencies. And we work very closely with the state OES and both the various county organizations during this event.

We also have established formal relationships with all of our major vendors and suppliers to ascertain equipment and materials that we might need in addition to manpower, if the situation called for that.

In this particular event, because of the very minimal damage to the actual physical network, we weren't required to bring in any sizeable amounts of material or manpower. We were able to handle the situation virtually within our resource capability.

In addition to those types of activities, the EOC also coordinates drills and practice runs. We've been doing this for the last two to three years. Most recently, we had an earthquake drill on August the 3rd of this year, which simulated a 7.5 quake on the Hayward Fault below Oakland. So, it was similar in nature to what we actually experienced, but probably would have experienced more physical damage than the one that actually occurred, but certainly was very valuable in preparing for this. And I'll refer back to that in a minute.

I tried to think about what worked well and what didn't work, in response to the types of questions you asked Mayor Wilson when he came up to the podium. I think what worked well is, number one, our folks were able to immediately go into action following the initial quake. The reason for that are these drills and practice runs that we have been conducting for a couple of years.

We have predetermined roles and responsibilities for people throughout the area in the event of an emergency, so those people were able to immediately implement those roles when this situation occurred. So, we gained all of the valuable time immediately following the quake that normally would go into planning, because we had already preplanned those events.

An example of that is, I got on my car telephone and I got on the network that we have established between the centers immediately following the quake. I happened to be in Oakland at the time of the quake. And within twenty minutes, people were already doing damage assessment and restoration activities. It was just that quick, and I think that was a big plus.

In the San Francisco area, we — and I'll speak to the geographies more or less, and try to paint a picture for you of what occurred — in the San Francisco area, we were hardest hit by power outages. That was the major problem we incurred. And that caused us, during the evening hours of the 17th and the early morning hours of the 18th, to put most of our resources into power restoration.

We have in place a number of preventative measures to help us survive a given number of emergency or natural disasters, earthquake being the prime one in this area. We have gone through our buildings and have provided additional structural bracing for earthquake reasons, seismic reasons. We have put in earthquake bracing on all of our equipment bays. We have reinforced and fortified all of our battery stands and battery racks so our storage batteries won't spill during earth movement. We have put in complete redundancy around our fiber network in the Bay Area, and 70 percent of your interoffice communications are on fiber in this area, optic fiber.

We have also installed, or have always had, three layers of power backup in all of our central office locations, in our critical locations. We have commercial power, we have emergency generators or diesel engines, and then we have battery power. And the switching equipment actually runs off of the batteries, on a continuing basis.

In San Francisco, when we lost that power, all of our offices immediately went on emergency generator power, our own emergency power sources. We experienced one site where we had particular problems with the emergency power, and that was in our Pine Street location in San Francisco, 555 Pine. It was off the power grid, obviously, because of the power failure, and we had trouble with the turbine engine there. We were on the diesel generator for many hours during the evening, but had a heating problem with that. We ultimately went on pure battery power sources, and at about 3:30 in the morning actually had to take two of the switching modes in that center off the air to protect the computer equipment.

There are five switches in that location, so it wasn't totally isolated from the network, but it was impaired.

Due to the location that it serves, and that's primarily the business and financial district downtown, and the early hour of the morning that it occurred, 3:30 in the morning, there was minimal, if any, customer impact, because there was a complete blackout in that area at that time, and most of the buildings were not occupied.

We were able to restore those switches to the network by 6:30 in the morning.

In the Oakland area, we experienced some damage to our facility at 1587 Franklin, which is kind of in the line that was described earlier, where a great deal of damage occurred, in this particular area. That was mainly building damage; it wasn't damage to the network itself.

Again, we have four switching units plus a couple of major tandem points in that building, and a number of other very critical systems, including 911, and none of those systems were lost during any time during this period. They all remained on the air and functioning, and ther was no interruption to service due to equipment failures.

The building itself was evacuated immediately after the quake. I was on the thirteenth floor of that building when the quake occurred, and immediately checked my carpeting under my desk. But we did evacuate the building. It took us approximately fifteen minutes to evacuate all of the people out of the building. We had the building inspected. It was deemed safe to have occupancy in it.

We have limited the occupancy in that building because of the construction work going on there now. We will have that back to its prequake condition, or actually better than that condition, sometime in December, due to the construction activity there. We will continue to work on that building for some period of time following December, probably for the next eighteen months, doing a number of upgrades in there, bringing it up to current code.

As I said, there was no network interruptions in the East Bay area.

In the South Bay, we lost power to most of our CO locations initially, but it was very quickly restored by the commercial power vendors down there, PG&E primarily. So, most of the offices, while they went on emergency generators, they restored the commercial power, and by late that night, we had most offices on commercial power in the South Bay area.

In the very south end, the Monterey Peninsula area and that, primarily Santa Cruz, Watsonville, Hollister, those communities, they were running on emergency powers during this entire event and remained on emergency power for a number of days.

The only problem we had there was in Hollister. Again, we had it on emergency generators, but we lost the generator in the late hours of the night on Tuesday. We were running it on batteries. We brought an emergency generator in, but it arrived — it did not arrive in time, and we had to take the Hollister switch off the air from about 3:30 in the morning till 9:30 in the morning on the 18th.

Again, it was restored to the network by 9:30 a.m. on the 18th, and has remained on the network ever since.

Other than that, of the 106 switching machines we have in this area, those were the only three incidences of any type of problem we had.

While we were trying to maintain the infrastructure of the network — and that's obviously one of the first priorities, is to get the network and the infrastructure up and working, or make sure it stays up — we were also providing emergency services to a number of the emergency agencies. We provided well over 500 lines to emergency agencies in the San Francisco area. We provided better than 200 lines to the Cypress control points. We provided over 500 emergency lines in the Hollister, Santa Cruz, and Watsonville area. Most of that

work was accomplished in the day following the event.

In addition to that, we provided a number of free services to shelter areas throughout the Bay Area, providing both local and long distance free calling. We also provided, due to the feature and functionality in the network, remote call forwarding of telephone lines for those people that were displaced from their homes or businesses to alternate phone locations. So, if you had lost your home and you had moved in with a relative, we offered call forwarding capability to those customers to forward their calls to the new location. And we provided that service free of charge, obviously.

The network itself functioned extremely well through the entire event. Some people say we were lucky. I don't believe it was luck. I think it's preplanning and execution that causes that to happen, and I think that's what this Commission is about. And then I applaud you for that effort, and I appreciate the opportunity to input into that effort.

We processed — you are looking at some call volume figures on the Cellular One network, and I'll try to relate them to those types of events. In the five or — in the seven hours following the quake itself, we processed about 20 million telephone attempts in the Bay Area in that seven-hour period. And I used the word "attempt" because I don't have all of the completion billing information to say how many of those were actually answered. I can tell you that those calls made it to their end central office destination. Whether they were answered by the person being called or if that individual phone was working, I have no way of knowing that at this point in time.

On Wednesday following the quake, we processed over 80 million calls in our network that day. That was one of the busiest days we've ever experienced. One of the long distance carriers had made a statement in the press that week that Wednesday was the largest day in the network, in their interstate network, that they had ever seen. And they had said they had processed over 144 million attempts.

On average, the busiest day of the week normally is Monday, and the Monday at the first of the month is the busiest Monday in the month. And normally, on that first Monday of the month, we process approximately 55 million attempts or calls a day, so you can kind of get a reference point there.

The other significant factor, though, is that the distribution of those calls are entirely different in a major disaster situation, such as the one we experienced, versus what you'd normally see on a normal business day in the network. On a normal business day, you'd expect your financial districts, your business districts, to be the areas of heaviest concentration of calling. In this case, right after the quake, the Marina, certain parts of Oakland, and then the Santa Cruz-Watsonville area became the hot spots. So, our network is physically constructed to handle high volumes into different calling areas than those that actually experienced the highest volume of calls.

The other factor — and it gets into network controls that we were able to place — is that, in a situation like this that has a specific geography being affected, we attempt to optimize the network in the favor of those people that are in that area. So, what we try to do is make originating calls higher priority than terminating calls coming into the area. To do that, we work in conjunction with the interexchange carriers and put what we call selective controls in place that restrict the number of attempts that will be processed into the disaster area.

During the three or four days immediately following the event, we had controls to the magnitude of 50 and 60 percent in place throughout the United States. Those were directed at the 415, 404, 707, 209, and 916 NPA's. By Friday evening, those controls were, in general terms, removed, and then selective controls were placed to specific NPA and NNX codes, or specific customer locations.

What happens as a result of those controls is a couple of things. First of all, people trying to call into the area will experience an overflow recording or 120-IPM busy signal. That's an indication that all circuits are busy. That's an intentional control we put in place. Those people that are located in the affected area — for example, the Marina — would have experienced some slow dial tone during that period of time, and we had enormous call volumes and attempts coming into the network. So, everybody was experiencing slow dial tone. That condition was fairly widespread throughout the Bay Area up until Friday.

By Friday, it was starting to localize into the specific areas that were hardest hit, and they continued to experience some delay in dial tone through the weekend and into Monday of the following week. Then it started to stabilize.

What that meant is, if you picked your phone up, you may not have gotten a dial tone immediately, where normally you would get it in less than three seconds. You may have had to wait fifteen to twenty seconds to get dial tone, in the worst case. Some people felt, when they picked up the phone, because they were used to hearing dial tone immediately, that their service was out. In fact, it wasn't; they just had to wait on the line.

We received a number of trouble reports in our Trouble Repair Bureau, 611 bureau, for the days following the quake, reporting phones out of service when, in fact, they just weren't waiting long enough. And we were giving customer instruction at that point, and then they would retrial.

The other thing that would affect the customer's ability to make calls during that period was loss of commercial power at their locations. If they had customer equipment or terminal equipment on their phone line that required AC power, they most likely lost that terminal device. So, if you had a cordless phone, for example, that requires a power source, you probably lost your service because of the terminal equipment losing its power. That's something I think we need to think about in the telecommunications network as we move more and more active devices towards the customer premise. How do we want to power those devices, and what kind of backup power would be required to maintain service continuity? As I said, in areas of opportunity, I think power is the issue that we need to really deal with in this event.

I think we need to do more work with the commercial power vendors and how we might be able to dual feed some of our major locations. In addition, we're looking at our own emergency generator and turbine situation and trying to figure out how we can better improve the reliability and the availability of that.

We do have access to portable generator equipment. In fact, in the case of San Francisco, the Pine Street location, we actually brought a Caterpillar 1750-kilowatt generator up from San Leandro. We actually had to do that with Highway Patrol escort, and take it all the way down around San Jose at the time to get it there. But we did place that in service.

Other things I think that — our ability to move information quickly immediately following the event is an area that we need to continually work on and improve. Trying to get an overall damage assessment quickly is a difficult thing to do, and I think we need to put more resource on that.

I believe we need to also do more preplanning around the displacement of people that are nonessential to providing immediate service, but have been — have been displaced from their normal work location. We struggled with that for the first few hours after the event, because we had to evacuate some buildings, and we weren't quite sure where we wanted the people to go once we evacuated them. And I'm not sure we weren't sending people home, when their home might have been in a worse situation than their work location. And so, we need to think that through, I think, and do more preplanning in that area.

In addition to that, we have a shortwave radio system that we use around the network to get traffic off the network so we aren't causing part of the bottleneck, and also in lieu of dial tone, if we find ourselves in a situation where we lose the central office. I think we need to work on the guidelines and protocol for use of that radio system so that we optimize its capacity.

We didn't have to rely on it heavily in this event because we didn't lose the network. But if we did have to rely on it, I think we learned enough to say that we need better guidelines and protocol on how we're going to use radio frequencies in the event of emergencies.

As far as plans for the future, I think I'd wrap it up by saying, "Practice, practice, practice." The more time and money we put into practice and prevention, the better off we're all going to be. We frequently are scrutinized, heavily scrutinized, for our capital investments in the network. But the money that we've put into building reinforcement, equipment earthquake bracing, emergency power backup systems, radio systems, and that sort of thing, certainly paid a dividend on the

17th. And I think it makes the investment well worthwhile.

I think any business in any community is always faced with the economic trade-offs. I think the question was asked earlier, "How far do you go?," you know. Is there such a thing as earthquake-proof? And there probably isn't. And I think it is an economic decision at some point, but I don't believe we've reached that point yet.

So, I think practice and investment, and a continuing emphasis on the need to prepare people to deal with these situations without having to receive a lot of instruction at the time the event occurs, so they have — well, they will have had to prethought it before they find themselves in the situation.

With that, I guess that ends my comments, and I'd welcome any questions you might have.

CHAIRMAN CLUFF: Thank you very much.

I want to commend you and Pacific Bell in the leadership that you've played in, as you've just described, the preplanning, execution, and practice, practice, practice.

I'd like to ask you if you could describe in a little more detail that process in terms of involving others, let's say, Office of Emergency Services, utilities, fire and police organizations, and whatever other emergency services. How do you — can you describe to us how you do those exercises, and then, what you would do different to improve it, given a more serious earthquake like the Hayward event?

MR. SINN: All right. Well, first of all, what we do is we create scenarios using subject matter experts within our own company. We've had — like, for example, we've made seismic assessments of all of our major building locations, so we have a pretty good notion of how those buildings are going to react under different situations. And our switching equipment is designed — and depending on the magnitude and the amplification of movement that you were describing so aptly earlier — but they're basically designed, in theory, to withstand 8.5 quakes or seismic conditions.

We develop scenarios based on certain assumptions, like a Hayward quake or whatever, and then we take those scenarios, and out of those — and they're quite detailed, they're quite massive — we take selective pieces of information and spot that information around our various emergency centers. And we actually man those centers during the drill. And we feed limited information into those centers and start to assess how they react to that information and how they utilize that information, so that we can actually feed data into our system, and then, during the day that we run the drill, we assess how much of that data comes back and was acted on appropriately during the drill itself. And then we hold a critique following that and make that type of overall assessment.

As far as participation is concerned, all elements of Pacific Bell participate, obviously. In the drill we conducted on August the 3rd, we had the state Office of Emergency Services was participating in that drill with us. We had representatives from other regional holding companies around the nation, Ameritech, Southwest Bell, a couple of others. We had an observer from PG&E participate in that particular event.

We also try to link up, as best we can, with the local and county agencies. We haven't directly involved them on a participative basis in any of our drills, and I think that's something we need to do, going forward. I believe a number of the agencies need to start planning interactive drills between the agencies. And you can do that kind of on a tabletop basis. It doesn't always mean activating everybody and everything you have, all your resources. But I think we need to do more work in that regard.

But we've had, I think, a fair amount of participation by outside organizations and agencies. We also, by the way, involve our major suppliers and vendors in those exercises.

CHAIRMAN CLUFF: Thank you.

Questions, Bill?

COMMISSIONER IWAN: It's good to hear that the lessons learned in San Fernando seem to have paid off. You indicated that the equipment was braced, the batteries were braced, and apparently no failures.

MR. SINN: Right.

COMMISSIONER IWAN: I have two questions, though, I'd like to ask. And the first one has to do with the 911 service. And I'm curious whether or not you take any special precaution with that particular part of the service, whether it's hardened, so to speak, in any special way, or there's any special provisions made to make sure that that survives a disaster.

And the second question is whether or not you're aware of any problems in service from the Marina area immediately following the earthquake. At the hearings last week, we heard reports that there seems to have been some difference of opinion of whether or not emergency calls were made that there was a fire in the area and so on. Could there have been any general outage in that area?

So, the two questions, if you would, please. Thank you.

MR. SINN: Okay. On the first one, on 911, the 911 actual switch that processes the calls and the computer that supports that switch are located here in Oakland. They're in our Franklin location, which is one of our major switching locations around the state. There's four of them, and Franklin Street is one of them. It's afforded all of the same protection and bracing and structural reinforcement that all of our switching nodes are afforded.

We are looking at a potential alternate site for the computer itself, the data base, so that we have backup on that. And our systems technology people are working that issue right now. That was one of the learnings I think we came out of this situation with.

So, I think that is more or less the extent to which we've tried to protect 911 service. Again, it's designed to theoretically withstand an 8.5 movement.

As far as the Marina is concerned, there was no physical loss of network in the Marina area, other than those buildings that collapsed. I'll guarantee you, they lost their drop. I mean, that's — that was gone. But the actual feeder facilities going to the homes and that were all basically in good order. We didn't experience any major facility outages in our loop plant. We experienced no outages in our interoffice facility network, as I had mentioned earlier.

What people probably did experience is heavy call congestion. It's natural. It's human tendency to pick your phone up when something like that occurs. The phone is kind of an extension of our alter-egos of our personalities, and we need to communicate, and find a need to do that. So, we saw an immediate demand for service from virtually every instrument in that area. So, we immediately went into a dial tone overload condition.

And what happens then, in an electronic switching environment such as the one that services the Marina, is the machines start to prioritize those calls. And priority is given to fire, police, hospital, emergency type services. And there's actually automatic dynamic overload control programs in those switches to do that. But even in that case, the demand for those services probably were overloaded also, because you're limited in how many paths you have going in.

You could — a good analogy for the network, the telephone network, is a freeway system. And freeway systems are not designed to handle every vehicle that is in the area simultaneously. And if everybody tried to get on or off the freeway at one time, you'd have massive gridlock.

Well, a similar situation occurs in a telephone network in the case of a major disaster like this. There's instant demand by almost everyone to use the system, so we have to start metering the system so that we can — we can have orderly entrance and egress from it. And that's the nature of the controls we put into the system.

COMMISSIONER IWAN: But 911, would that be a separate path, or does that get mixed in with the rest of the freeway, or is that —

MR. SINN: 911 would go through the local switch.

COMMISSIONER IWAN: It does.

MR. SINN: It is not a private network. It goes through the local calling network.

Now, the other part of 911 that has some vulnerability is the agency equipment, whatever they have on their — at their emergency control centers themselves and the reliance on power, for example, and backup power. So, that would be another vulnerability.

CHAIRMAN CLUFF: Yes. Yes, Bill?

COMMISSIONER KOCKELMAN: Chief Sinn, I was out —

MR. SINN: It isn't "Chief" —

(Laughter)

COMMISSIONER KOCKELMAN: I was out of the state at the time, and it took me 12 hours to reach my home. Were the lines deliberately blocked, or was that just overload?

MR. SINN: Yeah. As I mentioned earlier, that was an intentional blockage of the lines coming into the area so that people in the area would have better access to the network. We were choking, as I said, on the average, up to 50 to 60 percent of the call attempts coming from out of the area. One carrier had as much as 90 percent of the calls blocked at one point in time.

CHAIRMAN CLUFF: Other questions, Randy? Or, Keith — excuse me.

COMMISSIONER UMEMOTO: Yes. In reference to the Loma Prieta earthquake, this earthquake, and agreed by every single commissioner here, is one that wouldn't be considered the quote-unquote, "Big One." And if you had these problems in an earthquake of this nature, compounded with the growth, hopefully — I presume, from a business standpoint, with Pac Bell — that with the growth of Pac Bell, how are you going to be able to handle the Big One with multiples of additional customers?

MR. SINN: Let me replay your question and make sure I understand it.

As the size of the network grows —

COMMISSIONER UMEMOTO: Exactly.

MR. SINN: — given a larger event, could we manage the network?

I'd say the network would — well, depending on the nature of the quake — obviously, a 7.5 quake, if the epicenter was in Oakland, would have a different effect on the physical network than the one that we did experience. I think we all understand that, and we need to — we need to continually assess what that would look like. I believe we'd probably lose physical plant in a situation like that. I don't think things would have survived as well as they did in this one, because of the nature of the earth movement.

But as far as our preparedness to deal with the demand for service, I think it would be the same. And I think the response would be very similar.

Now, if we lost a physical switching site — let's say we lost a local office down in the Fruitvale area, for example — we have emergency switches that are mounted in trailers, tractor-trailer rigs, that could be brought into the area. They could be driven in or they could be flown in, depending on the requirement. And we can can establish service on an emergency basis using those portable switches. We also have access to portable power equipment, as you — as you well know.

In addition to that, we can establish temporary facility feeds. A good example of that is, close to the epicenter of this particular quake, we have a major facility that goes from San Jose to Santa Cruz. It's a T-2 system. And it goes up over Highway 17 and across the summit. Because of the earth movement up there, that facility was in grave danger of being lost. It had moved quite a number of feet away from its original position. We were able to bring in portable digital microwave radio systems and actually take all of the service off of that physical route and put it on radio systems, and then we allowed construction crews to come in and actually relocate that cable facility.

But we'd have that kind of capability in the event of something larger occurring in a metropolitan area. So, we could bring in microwave equipment and portable facility equipment.

We also have arrangements with major equipment vendors to tap all of their material and supplies nationwide. So, in the case of a major quake that might have more physical damage in the network, we would immediately start stockpiling equipment from all over the nation and bringing it in and staging it for redeployment here.

CHAIRMAN CLUFF: I'd like to — excuse me. I'd like to move ahead. We thank you very much for the presentation and the response to the questions and the good work that Pacific Bell and the people you work with are doing in getting us better prepared.

MR. SINN: Thank you very much.

CHAIRMAN CLUFF: We are very pleased to have Senator Petris with us. He's on the agenda, and we acknowledge that he's here in his district of Oakland. And Senator Petris is a long-term friend of the Commission. We worked together on a number of legislative activities. He certainly fully supported and carried the legislation on the earthquake research center that was unsuccessful, but not to his fault, and the legislation — or the California Earthquake Education Project at the Lawrence Hall of Science, and other seismic safety legislation matters.

Welcome, and we appreciate having you here with us, and would like to hear your thoughts and what we can do as a Commission to work more closely together to avert the problem of a bigger event.

SENATOR PETRIS: Thank you very much, Mr. Chairman and members. I appreciate the fact that you're conducting these hearings, especially coming to Oakland as one of the centers of the afflicted area in the East Bay.

I was told to give my own impressions. I don't think you need any more stories about what we saw and what happened and where I was and things of that sort. I guess we ought to concentrate on where we go from here.

I do want to leave one impression, however, rather than a long series of them. I was very, very pleased and impressed with the response of all the governmental agencies. The practice that was mentioned, practice, practice, practice, really paid off. I think there was some kind of drill about three weeks before the earthquake, maybe four, and that was one of several that had been going on for some time to anticipate different kinds of disasters.

I'm proud of the public employees who did their jobs exceedingly well at all levels of state and county and federal, and the volunteers' very heroic activity here in Oakland at the Cypress Freeway, for example.

And I remember visiting — one of the visits down there to the Cypress area, I ran into a lady getting out of her car who was looking for directions, and she was in the wrong part of town, and she was heading for one of the hospitals because she'd heard an appeal on the radio for nurses. And she drove up from Palo Alto to do some volunteer work as a registered nurse and asked for directions. And I sent her, of course, in the proper direction to get to where she was going. But that kind of personified the spirit, not only of people living in the afflicted areas, but from all over the place.

Now, the chairman, I was thinking as I came in, has this worldwide reputation for his expertise in this field, and I know you're called on practically every time there's an earthquake of major proportions to go to other places. And I was hoping that we could keep you on that circuit and not have to call on your expertise for something that happened here, even though we've all been expecting it for a long time.

The attention, I think, of most people right now is centered on the Hayward Fault. You know, we're holding our breaths. One big shoe has dropped; now we're waiting for the other shoe. And I guess the experts seem to agree that that's where the next hit is likely to be. And we're not very far from it right here, as a matter of fact.

So, what I would like the Commission to do, the only recommendation I have, is that you examine, if you have — you're probably are fully aware of it — you may have already done this — the recommendations made by the scientists at UC to institute immediately a plan for monitoring the Hayward Fault. They have a three-part program consisting of boring of holes, some forty holes, and dropping instruments into them, I guess, with some elaborate computer mechanism tied into a satellite system and followed up by a Phase Three, which I forget for the moment. But anyway, there's three phases in this. The costs would be $12.5 million, and an annual operating cost of $3 million thereafter.

My present intention, after studying it a little more and talking to people at UC, is to act on this in January when we go back, either through the budget process. I happen to be on the committee that oversees the UC budget as well as all education budgets in the state, and we could make that a budget item, or we could put in legislation, which would probably be better.

I think, if this Commission took a look at that proposal, and if you happen to agree with it and felt it was very helpful and necessary, it would give that a big boost. And if that does happen, then I'd look forward to working with you in developing the legislation, as well as with the scientists at Berkeley.

Let me get Part Three here — I may have covered it without numbering it, but if I can just take a moment to peek here — the first is a monitoring network, with the driving of the instruments — the holes, rather, and the other is a global positioning system, and the other is a data facility, which I left out. The computers which I mentioned would also store the data and make them available. And it would be the most modern and up-to-date and most comprehensive earthquake monitoring facility in the country, or anywhere in the world. Other places have parts of this, but none of them have all three.

Japan has just recently installed the satellite hook-up with some kind of monitoring they have, but they don't have all three either.

That's an area that we don't like to be talking about as we're first in this, but since we're first in the number of earthquakes, we should be first in the technology to monitor and try to predict as well as we could what's going to happen.

That's the only recommendation I have, and I intend to get into this. I came here really to express my gratitude to the Commission for its work over the years and for the hearings you're conducting now. If you have any questions or suggestions for me as a legislator, I'd be delighted. I'm not here only as a legislator to express my thanks, but as a native of Oakland who never left, and ain't gonna leave, even after this.

CHAIRMAN CLUFF: Let me start off by saying that we have received a copy of the Berkeley proposal by Dr. McEvilly, and I've had a chance to quickly look it over and discuss it with a number of people. And I fully support that kind of research. We've needed that. We need the money to get that kind of research, not only on the Hayward Fault, but a lot of other faults in other parts of California. And we're really short-funded in terms of doing that kind of research.

And while that research will be very helpful in the long term and will allow us to better understand the behavior of various active faults, there's a lot of things we already know about the Hayward Fault. And I'd like to focus for a moment on that other aspect and talk to you as a local resident here, in terms of seismic safety and levels of seismic risk that we ought to afford.

We know that the Hayward Fault went off twice in the 1800's. Those earthquakes were very closely associated with earthquakes on the San Andreas, 1836 and 1838. 1836 on the Hayward was followed by a larger earthquake on the San Andreas in 1838. 1865, the segment of the fault that ruptured just this past few weeks on the San Andreas, then, three years later, in 1868, the Hayward Fault went off.

We think there's certainly a relationship between the stress on these faults, when one goes off, that it adds additional stress, and so adds to the probability of a damaging earthquake occurring on the other. So, just intuitively, we are really worried about a magnitude 7 size earthquake striking the Hayward Fault. And we know, with all of the lifelines and critical services that serve the Bay Area, that is a much more difficult scenario to deal with than even a larger earthquake on the San Andreas Fault. Everything that feeds into the Bay Area essentially crosses that Hayward Fault.

So, I'd like your thoughts on how we might better improve our process of addressing seismic safety and deciding what level of risk we have to accept. We can't — even though it's technically possible to design and build our facilities to be near earthquake-proof, it's not practical. So, there has to be some acceptance of some degree of risk.

And I'd like your thoughts on how — we know there's unreinforced masonry buildings, we know there's City Hall and there's state and public buildings, the campuses in Berkeley — many of those buildings are extremely vulnerable. Several of them are collapsed hazards. How can we get the funds to correct those problems, even without this network that we certainly support?

SENATOR PETRIS: Well, the problem is, we're working under a very severe handicap, a mindset, if you will, of the last decade, which considers — its basic premise is that the enemy of the people is government, and that the best thing we can do with relation to government is to destroy it, just dismantle it piece by piece, and the best weapon we have for doing that is opposing any form of spending and any form of taxation beyond what we have now.

Even in this earthquake, in the three days we spent in Sacramento, we had some very tough resistance to the particular tax measure that had been proposed, the 1/4 cent. I made a motion in the Senate committee to raise it to 1/2 cent. That was defeated. It only got one vote, besides my own. The governor resisted it, and a certain group in the Assembly fought very hard, even against this 1/4 cent.

So, I think the first problem is changing attitude. And it has to be done right away, while this thing is fresh, while the TV is still showing scenes of the earthquake. People forget very quickly. The mindset is that we have to lift — I mean, that we need to change, I think, is to get rid of this attitude that any tax in any form for any reason is unacceptable. I mean, that's how bad it is.

It's reflected, for example, in the polls that are taken fairly frequently now, about what the average person considers to be the leading issue facing us right now. For years, it was crime, narcotics. The last few polls show traffic congestion as being the toughest problem.

Now, the disturbing thing to me is that the next question is: "Would you support a 5-cent increase in your gasoline tax to provide the money to solve this problem?" The answer is no, by 68 to 70 percent. And

I throw up my hands and say, "Well, if you want to sit there and make the freeways a parking lot and not do anything about it by making some kind of commitment, then just sit there." But I can't say that in the earthquake, because that means a terrible amount of destruction and death.

But that's the mentality that has been cultivated by some leaders in our society, from the state level up to the national. And in the past ten years, we've been competing in this orgy of tax-cutting, just for the purpose of being labeled as a hero who cuts somebody's tax. So, we did Prop 13, which deprived local government of — I don't know — $7 billion or $8 billion or $10 billion a year, over the last ten years. The infrastructure of this state is in horrible shape, and people have abandoned the notion that one of the best investments we can make is in public projects, public projects, investment in public things — libraries, schools, roads, hospitals. All of them are deteriorating.

So, even an earthquake didn't get rid of that — I mean, a very bad earthquake didn't get rid of that notion, with some people. But if we're going to do it at all, I think the time to start is now, with some highly visible comments and programs designed to educate the people on the cost, and put it up to them. I think they'd be more willing today to support public expenditures, as they did in San Francisco — they happened to have an earthquake measure on the ballot — incredible timing. That passed very handily.

Unfortunately, it takes an earthquake to bring some people to their senses.

So, my recommendation would be to try to conduct a highly visible education program, with the cooperation of the media, showing these buildings, making it a personal thing. I mean, I don't think there's hardly a building in the area that you show that a lot of people don't identify with immediately, whether it's a campus structure or the City Hall of Oakland, which is closed, or the state building — we had to move our offices — the entire state building was evacuated. We don't know how long we're going to be out. They're still talking about either tearing it down or repairing it.

But now is a time to appeal to people to make a commitment for public investment, even though it means, inevitably, there's going to be some kind of an increase in taxes for all of us for a, hopefully, a limited period of time, as we did in the earthquake.

Now, once you get that attitude changed and the public is more receptive, then you can come in with the marvelous programs of prevention and preparation. I think many of us who live in the stricken areas are doing it on a personal basis.

I confess that I was probably the least prepared, and here I am, I've carried seismic safety legislation, as you pointed out. I was probably the least prepared of anybody. I didn't have the kit. All I had around was some water. Apart from that — and flashlights — apart from that, I wasn't doing what I was preaching that everybody else should do.

Well, I got ahold of an engineer after the quake and asked him how long it would take to get past the rush of the immediate urgencies. I didn't want to take time away from other things that were much more pressing, because we were fortunate — our home was not damaged. But we're not sure. I'm not an expert. I want somebody to look at it and tell us if it's okay, and also tell us how we can shore it up — I mean, reinforce it, get braces and all these things I've been reading about.

Well, our appointment isn't until sometime in January. And I'm pleased. That's okay, because other people need it more urgently.

Well, the same manner that people are looking at their own individual situations, we ought to try to make them aware and sensitive to the fact that we need that same attention to public facilities and major private facilities that don't have the proper — because of their age, don't have the proper protection.

I think we've got to get away from this notion, "Well, it's" — you know, "It's absolutely necessary to do this for our safety and health, but we can't afford it." Well, if we can't afford that, and we can't afford this, and we can't afford the other thing, what can we afford? This attitude has propelled us on a ski slope without the jump, you know, the ski slope where you go down and you don't come up, for the last ten years, into a level, not only of mediocrity, but inferiority. You know, we are way behind the State of Mississippi in our commitment to public education.

When I was growing up, we used to laugh at Mississippi because it was the worst state in the Union in its attitude and its commitment toward public education. They did a terrible job. Now they're ahead of us in their commitment. I mean, that's shameful.

And you check other areas — roads — roads. Jerry Brown has been severely criticized, by me as well as others, because he slowed down the progress in building freeways. Well, in his worst year, he built more freeways than Deukmejian has built in his best year.

People don't seem to realize that. Why? Because it's part of that mindset. It's his mindset and the supporters he has in Sacramento who just don't want to open up the bucks. He's vetoed two major gasoline tax increases in the past few years, one carried by Senator Foran when he was there, and the other one by his successor.

Now, it takes a two-thirds vote to get any tax measure passed. That means a combination of both parties. One party can't do it. And in spite of the resistance and the attitude that I'm talking about, we managed to get, on two separate occasions within the space of a couple of years or three, two-thirds vote on a major proposal for increasing the gasoline tax in order to tackle our congestion problem. We didn't make it; he vetoed it.

So, that's a long answer to a short question, but I'd go back to it. I think the first thing we need to change is attitude and develop a willingness to make a further sacrifice to get these things done. Now, we can't do everything 100 percent, but I think we can do a lot more than we are presently conceding can be done. I think we need to do a lot more.

CHAIRMAN CLUFF: Thank you. Commissioner Bolt?

COMMISSIONER BOLT: Senator Petris, it's very good of you to come along, because we know of your great support over the years for this earthquake safety effort that we're making.

SENATOR PETRIS: Thank you.

COMMISSIONER BOLT: As a seismology representative on the Commission, I thank you for your interest in the proposal to upgrade the instrumentation along the Hayward Fault. I would take the opportunity, though, to let you know that the other side of preparation is research and earthquake engineering. And there is now in California a public interest nonprofit corporation, the California Universities for Research and Earthquake Engineering, that arose really out of our failure to ge the matching funds from the feds for the center, which you, of course, helped us carry the successful legislation for matching funds in California. And the eight universities involved there are now putting together a proposal which will go forward to the state for enhanced research in earthquake engineering.

I think that, for many of us, that is a really critical need here in California, to make sure that the universities have enough funds to look at structures, so that when earthquakes come, we don't have to worry about all this damage and so on.

SENATOR PETRIS: Well —

COMMISSIONER BOLT: I just mention it —

SENATOR PETRIS: — if you'll just keep me up to date, I will do everything I can on the budget side and to work with Senator Alquist, who is really a champion in this field and has carried maybe 95 percent of all the legislation. Whatever it takes, I think we should do it. I don't think there's any question of quibbling or cutting corners. We can't afford to cut corners.

CHAIRMAN CLUFF: Barbara?

VICE-CHAIR RIORDAN: Yes. Senator Petris, I represent local government on the Commission. And, again, thank you for your support of a bill some years past that was carried by Senator Ayala that talked about long-term recovery for local governments.

And you asked earlier on what you might be able to do, and I think, as I recall, the bill was very successful. However, the governor took the money out of the bill, so it became really a nonissue.

I think that needs to be relooked at, because, as I see it, there is some long-term recovery, because of our businesses and land use decisions that may result in not necessarily being expedient, and really a tremendous impact on the economy and employment in an area.

So, I would urge you to perhaps revisit that idea of long-term recovery and have some plans in place prior to an event, and not after an event, when it becomes so difficult to implement any type of recovery.

SENATOR PETRIS: Yes. Yes. If you have a — I would appreciate a written reminder, with emphasis on that portion that you think is the most crucial. And I will be delighted to jump into it.

The one bill I carried, incidentally, on the earthquake, had to do with expanding the definition of local government that was in the statute carried by Senator Campbell for disaster aid — just passed recently, as a matter of fact — which gives the governor more flexibility to act quickly, before the session even gets called in. But his definition of local government didn't include things like community colleges, county boards of education, and we expanded it to nonprofit agencies as well, hospitals, schools, et cetera, who would be eligible for some kind of assistance.

So, I would like very much to revisit that area, and maybe we'll have better luck this time.

And again, we ought to do it right away —

VICE-CHAIR RIORDAN: Yes.

SENATOR PETRIS: — starting in January.

VICE-CHAIR RIORDAN: Yes. This is a window of opportunity.

SENATOR PETRIS: Yes.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. I just had to get a plug in for the senator and, of course, my boss, Assemblyman Cortese. I wish everybody could hear the battle on Saturday on their bill, SB 38X, on nonprofits and community colleges and recreational facilities, because there was a real battle for a lot of bills, but I think the senator's bill and Cortese's bill would have probably got more attention and more controversy than the rest of it, so that a lot of these nonprofits can get some assistance.

But one other thing, too, that I think that I just wanted to remind the Commission of again is the Gann limit. And the Department of Finance last year said that we were $89 million below the Gann limit. The Budget Committee said it was closer to $500 million, depending on, you know, what the revenue figures were. But in any event, you know, no matter what kind of revenues we get, it's going to be tough for the state to spend it.

And I know the Commission has a lot of initiatives, but, again, I think we need to look at the Gann limit. There's going to be something on the ballot in June, and I think the Commission should consider taking a position on that, because we're just not going to be able to address these issues adequately if we don't try to do something about that.

SENATOR PETRIS: Yeah. I appreciate that. And let me reinforce that. Assemblyman Cortese carried the same bill I did. In fact, I copied his. It was an Assembly initiative, and we were asked to put a similar bill on our side.

That was the toughest fight of all. That was even tougher than the tax increase. People were concerned about — well, some of the opponents made it a Stanford bill, because I went to Stanford, I guess — at least to law school. I'm a UC grad — I want everybody to know that —

(Laughter)

SENATOR PETRIS: — but I went to Stanford Law School, and there were some Stanford lawyers who were really volunteers up there, working hard to get some help. But they overlooked the fact that that section was for private, nonprofit organizations. And when we put it in, we were thinking more of hospitals and schools in general that were not part of the public school system. And we got a terrible battering on that, in committee and on the floor, but we made it.

But the Gann limit, I opposed very strongly. I thought it was an insult to our representative government. I thought its underlying premise was that we can't trust people that we elect to the city council or the board of supervisors or the legislature to spend our money properly, so we're going to impose this arbitrary ceiling based on population growth and the Consumer Price Index, both of which are synthetic measures, when you look at the needs of areas that require our attention, whose growth is far in excess of the normal population growth.

Prison population, for example — on the one hand, we're screaming for more and more prisons, and we've got more prisoners than any country or state in the world, at least in proportion to our population, and we don't take note of the fact that the population growth of the prison, because of this vigor in enforcement and so forth, has far exceeded the increase in our population generally. And other problem areas are increasing at a faster rate. So, it's a very synthetic kind of formula that says, even if we get an enormous amount of money from the normal sources, without any increases, we can't spend it. We can only spend it up to that level, and we're hitting that level now.

Our head is banging against the ceiling, and it's really going to handicap us to tack on these emergencies. I favor repealing the Gann limit. I think it's an insult to local and state elected officials, and to the people who elect them. But we can't do that in the current climate. But at least we have the modification which will put in a more realistic formula than the one we have now.

CHAIRMAN CLUFF: One last question. Keith?

COMMISSIONER UMEMOTO: Yes, Senator.

Also I want to extend our — the Commission's appreciation and Senator Alquist's appreciation for your taking up SB 38 during the special session, which was enacted this past Monday, and, of course, the companion bill by Assemblyman Cortese.

Kind of alluding to what Randy Pestor, from Assemblyman Cortese's office, was indicating, two years ago, we saw the Whittier Narrows earthquake. Many people thought what was done during the special session took care of pretty much all the, quote-unquote, "earthquake matters" that were necessary, and the subsequent legislative year — and I'm not pointing any fingers at you, because you've been very supportive of these measures — but the Seismic Safety Commission batted 1000 in not getting any of their sponsored bills enacted that following legislative years, subsequent to the Whittier Narrows earthquake.

What do you see the as the prognosis, in particular in coordination with the Gann spending limit, how that's going to affect seismic safety issues as well as other governmental services?

SENATOR PETRIS: I think it's going to be a tough fight, in spite of the earthquake, for all the reasons I mentioned. I would think, because of the much greater damage and higher visibility nationally of the recent earthquake, that we'd have a much better chance. But I'm not taking anything for granted. I wouldn't bet on any one of those bills passing. I think the chances are much higher than we had before, and I suppose, by the — I'm not betting on it, but I'm expecting that we'll do it, let me put it that way.

That's the best prediction I can make. It's just that the forces opposed to solving problems that cost money for the solution are still very strong.

I think the governor was really shaken up, forever. Yesterday at the bill-signing, or the day before yesterday, one of the reporters asked if that were enough money, and why didn't we — why didn't we go to a higher amount? And there was total silence. And I said, "Well, I guess that question's directed to me, since I'm the one who tried to increase it." And I complained I thought it wasn't enough, but I felt reassured by what the governor had told us privately as well as publicly.

And when that press conference ended and he had signed all the bills, he turned to me and said, "Look, Nick, we're not going to let you down. We're not going to forget, but we haven't done everything in this session, and whatever else needs to be done in January, we're going to do." And I believe him. I think he was really moved.

And I want to take this opportunity to commend the governor. He came back from his trip, official business in Germany, opening a trade center, cut that short, flew back immediately, came directly to the Bay Area and did a tour of the whole place, met with local officials, and then met with the legislative leadership, formed a plan, and moved ahead with it. I think he reacted to this very, very well.

And I think that he would be amenable to doing some things that previously he wouldn't do.

One of the reasons why it remained at 1/4 cent is the Gann limit. That's probably the main reason. But there was also this other resistance in not going any higher than absolutely necessary. That usually means you go low, instead of meeting the need.

So, overall, I feel better about our chances, but I still wouldn't bet on it. It just depends on how much this sticks in the mind and they don't go off to other things.

CHAIRMAN CLUFF: Thank you, Senator Petris —

SENATOR PETRIS: Thank you very much. I appreciate it.

CHAIRMAN CLUFF: — for taking your time to come and work with us. And we look forward to future collaborations.

We are slightly behind schedule, but we had a blank spot in the agenda, and I want — before we move into the Highland Hospital part of the agenda, I'd like to acknowledge — where did Frank go? He left.

Frank!

COMMISSIONER CRANDALL: He's talking to the senator.

CHAIRMAN CLUFF: While that's going on, then, I'll move on to —

EXECUTIVE DIRECTOR TOBIN: They've got him.

CHAIRMAN CLUFF: Oh.

I wanted to acknowledge the presence of Frank McClure here in the audience. Most of us on the Commission know Frank. Frank is the immediate past president of the Earthquake Engineering Research Institute.

And from a personal point of view, most of the important things I've ever learned about earthquakes is because of Frank McClure. And I'd like to give Frank a few moments to make a statement and give us his views on Seismic Safety Commission activities and what he thinks we can do to improve what we're doing, and whatever else, Frank.

MR. McCLURE: Thank you very much. I appreciate the opportunity to talk to the Commission. I really feel like I'm preaching to the choir. I wish I could turn around and talk to the press here.

I've been following what's been in the newspapers, and I must say, I don't hear enough about the Seismic Safety Commission. I think it's wonderful that you're having these hearings.

I think this meeting today is very significant, from what you heard from the Mayor and Senator Petris. And I'd like to talk about one aspect of your program that has had a direct effect on what I do. I'm a structural engineer. I design buildings. And I'm talking about the Strong Motion Program.

I'd like to talk specifically about a building that I designed in Oakland 25 years ago. I was concerned about this building. With the help of the professors at the University of California, Berkeley, the building was shaken — what they call "tickled," and we have some very important data on that building.

Unknown to me, the Division of Mines and Geology instrumented that building. And when I got their second quick report, I saw that that building had been shaken with a base shear — the ground shook at 26 percent gravity.

These instruments in the building are very important that engineers understand why buildings resist earthquakes.

The second floor of the building shook at a percentage of gravity of 55 percent. At the roof, the building shook at two-thirds gravity.

I called up the Division of Mines and Geology and asked my friends what happened to the building. And they said, "Well, we drove by, and the windows weren't even broken. The stucco wasn't cracked." Well, with that assurance, I had the courage to drive down to Oakland.

(Laughter)

MR. McCLURE: I parked a block away, and I peeked around the corner, and there was this building.

And I'm going to show you a picture of this building — but this is very important to engineers, because now we have the recorded ground motion, we have the motion in the second and third floor, and we can, hopefully, go forward and find out why buildings of certain types of construction configuration perform well while others do not.

(The following remarks were accompanied by a slide presentation.)

MR. McCLURE: This is a building at the intersection of 17th and Webster. As I said, I designed and drew this up 25 years ago.

Next slide.

This building is of structural steel. It's a complete moment-resistive frame. I looked at the details of this, and you wouldn't know the difference between the details we use today.

Those of you who are knowledgeable of earthquake engineering will point out — I like to point out that there are many columns in the streetfront. This building has an irregular configuration, and I was very concerned — and when the architect had large window mullions, I went to him and I said, "Would you mind if I put a steel column on every one of those mullions?" And he said, "No, go ahead."

And so, I think configuration, judgment, what we learn by investigating earthquakes really pays off.

Next slide.

I'm not an advocate of any material — I want you to understand that — but I'm just saying, here's a building that was designed 25 years ago. I designed this building for 6 percent of the mass of the building. That was the current code at the time. And yet this building was shaken with a peak acceleration of almost four times that. And I think we have to sit and do some more research. And that's why I appreciate the chairman's comment about we need a balanced research program. And we have to understand, as clearly as we can, why buildings perform well and why they don't.

And so, the next slide, that's a building in which the windows didn't break, the stucco didn't crack, and there was just some very minor ceiling tile that fell.

Next.

I would like to close and commend the Commission particularly for their Strong Motion Program. There are many other aspects of what you're doing that I would not want to take your time and dwell on, except to say, based on my experience working in the Oakland schools here many years ago — I was active in talking to the public, in convincing the taxpayers of the need to have the schools investigated, and put forth the bond issues that passed. And I think it would be very important if the Commission might look at the performance of the Field Act schools in this earthquake. I think you'll find that they performed well. They were used as emergency centers, as compared within Charleston, where they planned to use the schools for emergency centers and they were not available.

I think we have a story that we can feel proud of, and I think, hopefully, that the press in the back here will pick this up.

And, again, thank you for allowing me to bring this good news to you, and keep up the good work.

Thank you.

CHAIRMAN CLUFF: Thank you, Frank.

Any quick questions of Frank before he leaves?

LeRoy?

COMMISSIONER CRANDALL: What was the period of your building, Frank?

MR. McCLURE: That's what's really interesting about this building, is that we shook it, we tickled it, before the earthquake.

COMMISSIONER CRANDALL: Yes.

MR. McCLURE: And this building has a period that is twice as long as you would get by code. It has a period of .42 seconds. And that was new information to me.

I'd like to say, in response to that, when we were shaking this building, on the roof we were able to stand there and take a tape measure and measure from the parapet of our building to the adjacent building, and this building moved an eighth of an inch. And the architect came over to me and he said, "Gee, Frank, do you think it's strong enough?" And here, all the time, I'd been fighting with this architect to give me more strength in the building. I think we made a believer out of him.

It's important that we do instrument and investigate these buildings. I think one of the key things we need in our research is to get a better feeling about what the true period of these buildings are. There's a lack of data, and it's a very key factor in how we arrive at the base shear coefficient.

COMMISSIONER CRANDALL: How did your building period compare with the ground motion from the —

MR. McCLURE: Okay. Now you've just asked the key question. I hope to work with the Division of Mines and Geology to get a digitized record of the ground motion, the floor response, and the roof response, and see if we can't work out some correlation. I'd like to do that.

COMMISSIONER CRANDALL: You haven't estimated it yet? It must have been about one and a half seconds, wasn't it, something like that, the ground?

MR. McCLURE: I haven't done that additional bit of research. I was so pleased with how the building performed, I haven't looked too much closer at the record.

COMMISSIONER BOLT: The ground motions down in there, they were like .6 seconds at 5 cycles.

COMMISSIONER CRANDALL: .6, as compared with this .4?

COMMISSIONER BOLT: As opposed to his.

COMMISSIONER CRANDALL: Well, he was on pretty good ground there, then.

MR. McCLURE: On the contrary. We were located on the Merritt sand. The soils engineers were concerned we might be in an edge of an ancient Lake Merritt. And, in fact, when we were — the building was being constructed, we would move the equipment onto the site, and the site was pretty — pretty spongey.

COMMISSIONER CRANDALL: But not the bay mud, that area.

MR. McCLURE: No, but it's the Merritt sand.

CHAIRMAN CLUFF: We're going to have to move on.

MR. McCLURE: Thank you.

CHAIRMAN CLUFF: Thank you very much, Frank, for coming here.

MR. McCLURE: Thank you very much.

CHAIRMAN CLUFF: And we'll have a chance to talk with Frank in future times.

The next item is Dr. Michael Smith, the Director of Trauma, Highland Hospital. We're very pleased to have Dr. Smith with us today, and if he could tell us what worked, what didn't work, and how we can improve the process, and how the Commission might be able to facilitate some of your activities.

DR. SMITH: Well, I'm going to try.

One of the things that I thought would be appropriate would be just to go through what happened at our hospital. And there's obviously some broader systems issues that need to be addressed through EMS, et cetera.

But I was at home when the quake hit, and I live in Moraga, which is on the other side of the hills. Highland Hospital, by the way, is in Oakland. It's the county hospital for Alameda County. It's also the regional trauma center for Northern Alameda County. And I was faced with a dilemma, first of all, of trying to find out whether there had been extensive damage, and whether a red alert had been called, which is the county response to a disaster.

I was able to call the hospital, and found out that indeed there had been a red alert called, although they were having troubles communicating out, because of the phone and also that the power was out at the hospital and we were on auxiliary power.

I was then faced with trying to figure out how to best get back to the hospital. There basically were two routes I could take, and there was really no source of information to try to decide whether the Caldecott Tunnel was open, for example, or whether I should go up over the hills. As it turned out, either way would have worked, and there wasn't that much damage.

But that was a problem, and it was a problem that was faced by a lot of individuals who, even though they couldn't — weren't called by the hospital in the disaster, knew that they should come in, and had questions about the best route to take. And that's something that the Commission might keep in mind when looking at the communication issues, about trying to define, for both health professionals as well as public safety, very early in the response, what exactly the routes are to both hospitals and disaster sites.

We arrived at the hospital — when I arrived at the hospital, the hospital was on emergency power. We did have operating room capability for five operating rooms, and the internal disaster plan for the hospital had been initiated.

One of the other problems we were faced with right away was that we did not know if we were going to be able to get specific individuals, who were key individuals in the medical staff, back to the hospital. Our neurosurgeon on call that day lives in San Francisco, and the bridge was out. Our orthopedic surgeon was at Candlestick Park. And these were all issues that the disaster plans and the disaster drills that we'd had in the past did not really deal with.

Luckily, we were able to get the individuals to the hospital.

When — about 45 minutes to an hour after the quake, it became clear that we were not, as an individual facility, being flooded with major numbers of accident victims, and one of the paramedic personnel, one of the paramedic supervisors from Regional Ambulance Company, came to the hospital to pick up some supplies and asked if — told us that there were possibly 25 to 30 critical trauma patients that were still trapped down at the site — this is the Cypress site — and whether we could put together a medical team to go down to the site, in case there would be a need for a surgical extrication, which, in fact, did occur, as most people are aware.

We put this team together and responded to the site approximately an hour and fifteen minutes after the quake hit, and set up a small medical receiving unit, with several nurses and myself and another surgeon and some of the emergency physicians from Highland at the — at the site of the Cypress structure where the paramedic personnel were distributing the ambulances to the various facilities in the county.

Two of the things that we noted immediately at the site that we had problems with, one was lighting, and there was someone who showed from Westinghouse, I believe, who came up and helped us set up some lighting. And also, there was — the public safety lighting, unfortunately, was all in big trucks that were diesel-powered and were very noisy, and if we were going to have them near a site where we were going to be doing medical care, it was felt that we couldn't hear and so forth. So, that was a problem.

As it turned out, again, the site that we originally picked was, unfortunately, felt to be unsafe after someone got a good look at the structure, and we had to move back a block. But, as it turned out, we did not see, again, an enormous flow of patients. It appears that what happened in this case was that the people that could get off the Cypress structure got off very rapidly, and the people that were severely injured or crushed were basically dead at the scene. And there were relatively few patients in the gray zone. There were some — I think we operated on four patients that night at our hospital, and I believe, throughout the county, that about 50 or 60 patients were admitted to the hospital, although I'd check with EMS on those exact figures.

But I think, from a medical standpoint, we were lucky, if you can consider it that, in that there was not an enormous overload of the medical system, which could have occurred.

We did have a problem in our hospital with power. Even though we've had drills in the past and had disaster scenarios, a lot of things that we'd assumed were on emergency power, in fact, weren't. We had no in-house standing X-ray capacity, for example, and only had portable X-rays, which — the machines would have had to have been recharged. And if we'd have had an enormous influx of patients, it would have been a significant problem.

We requested, and formally — haven't formally requested — we are going to ask that the state EMS agency does consider putting a disaster medical team into the sort of skeleton disaster plan for the state. But I think we have to be very careful in recommending that, because that's a unique — this was a unique situation, and I don't think that we're going to ask that be done on a regular basis.

The best places for doctors and nurses to take care of patients is in hospitals, and we're not advocating that every time there's a major accident or something, a team of doctors and nurses go to the scene. I think public safety would certainly agree with that. But I think that there is some rethinking that we have to do on our response at scenes such as this, where there's multiple victims that have long extrications.

The other issue that needs to be addressed is the overall issue of trauma capability in general. And as this disaster has become a chance to focus on a lot of other tangential or related issues, I think it's a time for, certainly, everyone to look at trauma care and accident care in general. More people are killed on the highways of this country, for example, every day than lost their lives during this earthquake. And the reason we were able to respond and the way the county was able to respond in the way that it did, from a medical standpoint, was because we do have a trauma system, and we do have a strong prehospital system that's been supported, basically, by local tax dollars for the most part, through an assessment district. But trauma systems in this country, and particularly in this state, are in severe trouble. And, in fact, L.A. has had closures of trauma centers, et cetera.

So, I think that that's something that needs to be looked at in the context of all the other things. And, certainly, it's not necessarily in the purview of this Commission, but I think that it is an issue that, if the next quake occurs and all the trauma centers have gone under because of the lack of financing, I think that our medical response will probably not be as good.

There is a difference, obviously, between a disaster response and the day-to-day trauma response the system has. Nevertheless, the fact that we were able to bring qualified people down to the scene, et cetera, to do the extrication that was required and so forth, was based on the fact that we do have a trauma system in this county.

So, we were lucky in that we weren't overloaded medically. If a couple other structures had gone down, or if the things hadn't been quite so easily divided into nonsalvageable and salvageable at the Cypress site, we could have been in a significantly different situation.

So, I'd be happy to answer any other questions anyone has about the medical aspects. I can't speak for EMS particularly, but I can give you some insight, I think.

CHAIRMAN CLUFF: Dr. Smith, I remember seeing Highland Hospital on a map, but it's been some time. Where is the hospital located with respect to the Hayward Fault?

DR. SMITH: We are right off of 580, and on East 14th Street. And, quite frankly, I'm not sure where we are in direct relationship to the Hayward Fault, but we're pretty close.

CHAIRMAN CLUFF: Fairly close. Yes, right.

DR. SMITH: And, as a matter of fact, I think most of the hospitals in Oakland, the other major hospitals in Oakland, are on the so-called "Pill Hill" area, which is, again, I think, next to the freeway and is probably very close to the fault line.

One of the things that I learned from this that was different from the drills and so forth that we've been through, we never talked about the doctors and nurses and people not being able to get to the hospital. And that was a real issue.

And we were able to get some of the medical staff there, quite a bit of the medical staff, actually, but there — you can never count, necessarily, on having certain key individuals there. You never know, for example, that a bridge isn't going to fall on your neurosurgeon or your orthopedic surgeon, or somebody very critical. So, that's a whole ripple to this that really never came up in any of the drills that I've been involved with. And I think we've learned something from that.

CHAIRMAN CLUFF: Yes, Pat?

COMMISSIONER SNYDER: Yes.

Doctor, I'm a registered nurse, so I have some interest in the medical field.

I had one question. Did you have automatic recall as a part of your hospital disaster plan, where off-duty personnel would automatically report back?

DR. SMITH: What we have normally is a call-back system that's based on sort of an algorithm or an organization of people calling individuals back. And it hasn't been, in the past, automatic.

Obviously, that will be looked at as part of our modification that we'll be doing, because that was a real problem, not being able to use the phones. So, I think we are going to modify that.

COMMISSIONER SNYDER: A second question was — I don't know if you had experience with unsolicited medical volunteers at the scene.

DR. SMITH: Yes, we did.

COMMISSIONER SNYDER: Were they helpful? Were they a hindrance?

DR. SMITH: They actually were neither, as it turned out, because they were — they were very polite, they weren't obtrusive. They kind of came and said, you know, "We heard about this," and they were here to help, and we asked them, "Fine, would you stand by?" And we don't — we weren't receiving an enormous number of patients at that point. So, they did come, and they were helpful in that they cooperated and there weren't medical turf issues going on at the scene, et cetera.

And I think if we'd have been in a somewhat different situation with the number of victims, it would have been very important.

COMMISSIONER SNYDER: That was my question. If you had more injuries and fewer fatalities, would it have been helpful to have someone there to manage the medical volunteers?

DR. SMITH: Again, I think — again, one of the things that I learned by this is there's almost an infinite number of permutations of things that can happen with the victims. And I don't know exactly what I was thinking I was going to see, but I think I had sort of a vision of going down to the site and seeing thirty or forty people out on stretchers, and you're going to have to decide who goes where and who lives and who dies. And that wasn't the situation we had.

I think that certainly could be the situation, though, given a few more structures down. And, you know, some of the major freeways, luckily, were all intact within the county, to get to the various hospitals, for the most part. But that certainly could be a scenario that you could envision, having seen what we saw with this.

CHAIRMAN CLUFF: Bill.

COMMISSIONER IWAN: You've certainly raised some interesting questions about the future of trauma centers and their integration into disaster response. And I was just wondering, in your comments about the ways things happened in this particular earthquake and how you established a center there for the surgical extrication and so on, it seemed that that almost happened by accident, or by happenstance, and that there wasn't any real plan for that. And you mentioned, I think, that you were going to be talking to the state EMS about that.

DR. SMITH: Um-hmm.

COMMISSIONER IWAN: Do you see any role for the Commission in helping with working out some kind of a plan that would be in effect during the next disaster?

DR. SMITH: It's sort of like you can't — you know, you're always training your soldiers to fight the last war, and there's no guarantee that the next earthquake will be anything like this, as far as the medical aspects or any of the other aspects of it.

I think that what would be helpful would be just a general elevation of concern and understanding within — you know, within agencies like this or commissions like this, as well as with the public, as for the day-to-day need for this.

And even though it was — it was sort of made up at the time, it was not made up by people that weren't used to dealing with casualties and so forth. It was sort of chance and the prepared mind kind of thing. And we were able, because we had a system, to, first of all, feel confident that we had enough resources at the hospital so it was not — it would have been an error to leave the hospital right away, when you didn't know what you were going to be getting.

So, I think that just being cognizant of the fact that there is a real need for educated, prepared people, both from a medical and a nursing standpoint, as well as administrative standpoint, with prehospital and public safety, is as specific as I can think of right now.

CHAIRMAN CLUFF: Barbara?

VICE-CHAIR RIORDAN: Yes.

Let me ask you, in your county plan as it relates to medical, is there one individual in charge? Is it your public health officer, or is it somebody else? And was that communication, then, with that individual easy for you, or was there an inability because of the phone system or lack of a communication instrument?

DR. SMITH: The way the plan works within the county is under the auspices of the EMS agency, the county EMS. And the actual, I guess, medical head of that would be the medical director of the EMS agency.

What the plan calls for is that the base station, which is one of the hospitals that normally would direct ambulance traffic, that's furthest away from the scene, acts as sort of the disaster base, and does the triage, since they're less likely to be inundated with victims.

I think that when we talk about the communication problems, that you have to look at it on two levels. I don't know of any major thing that didn't happen medically because of poor communication. I think there was a sense that the general people involved didn't quite have a sense that they knew what was going on. But my understanding was that the people, the key people that needed to be communicating with each other, were communicating.

So, there wasn't free access to communication by everyone involved, but my sense was that there was not a major breakdown in the main, critical arteries of communication needed for the response.

VICE-CHAIR RIORDAN: Okay. Thank you.

CHAIRMAN CLUFF: Excuse me.

We need to move on.

Thank you very much, Dr. Smith, for taking the time out of your busy schedule.

We have two representatives from the Alameda County Mental Health facility, Dr. Mary Thomas, Director, and Nancy Fernandez.

Welcome to our Commission hearing.

DR. THOMAS: Good morning. And thank you for inviting us to participate in the hearing.

You've certainly heard a great deal at this point about the emergency response, the structures, the emergency services, the medical services, the communication, and the mobilization of all those personnel. I'm here primarily today to make a pitch for the need for the inclusion of mental health services at the very beginning of a disaster such as this one.

We know from studies of other traumatic events that when there is a critical incident, there is both physical trauma and there is psychological trauma. And in the absence of early intervention, there are mental health casualties that, in fact, develop. These mental health casualties are involved in the general personnel, just in the general community at large, but also in rescue workers who are responding to the trauma of the event.

The mental health system in Alameda County, in fact, in large part thanks to Nancy Fernandez, had a disaster plan. We were in our final draft of the plan, so it was an untried plan. We didn't — hadn't even practiced what we were going to do. However, I think the plan was a very good one, and it worked. And I'd like to just give you a capsule look at what we, in fact, did, what worked, and what some of the problems were in the implementation of our plan.

One of the things that we did was to immediately establish crisis lines so that people who were experiencing trauma and needed to talk with someone would have 24-hour lines that they could, in fact, access. We began to provide community groups so that we could minimize the trauma that the general populace was experiencing relative to the earthquake, and again, to not label these people as mental health casualties, but to, in fact, help them appreciate and understand that the reactions that they were having were indeed normal, given the situation.

We are providing crisis visits. We are in all the shelters. We're providing support in the disaster assistance centers. And we eventually provided debriefing services to the rescue personnel at the Cypress structure.

However, that is an area that I'd like to make this Commission aware of, in that had our access been easier to the rescue personnel, had it occurred earlier, I think that we would have, in fact, been more effective at working with those rescue personnel.

In order for that to occur in a more timely way —and ultimately, we had two sites — we had a tent set up at Cypress, and a gentleman from the community volunteered a mobile home, which was set up by our general services agency, just in the nick of time, just before that massive rainstorm occurred, so that we did have a dry place for rescue personnel to come and be debriefed on what they were experiencing as part of their rescue work — however, in order for this to occur in a regularized way, mental health needs to be part of the emergency response operation. A built-in system of peer counselors who work with mental health professionals, which is a program that is currently in operation in the Los Angeles Fire Department, is one that I would certainly recommend be implemented statewide.

These kinds of rescue units ought to be available and included in sheriffs' departments, police departments, the CalTrans workers, CHP, fire departments, paramedics, et cetera, in that these are people who, though they are accustomed to dealing with trauma on an everyday basis, the kind of trauma, the kind of experience that occurs during an earthquake, the kind of sights that they see, the experience that they have, like at the Cypress structure, are extraordinary and produce extraordinary stress.

Alameda County is extremely fortunate, as I said, in that we had a plan. The state Department of Mental Health responded exceedingly well. They were very, very quick to compile a list of other mental health professionals who could come in and provide support, who had gone through disasters in the past. They sent additional staff. We got immediate, almost, approval of additional funding to bring in other people.

But someone earlier who represents local government mentioned a need for some longer-range look at a response to a disaster, and I was sitting in the back and couldn't see the individual who made the comment, but it was one of the women on the Commission. The state will go home, people from other counties will go home, and Alameda County will certainly be left with some long-lasting problems.

We're beginning to experience some of those problems now, in that people who were evacuated and moved into shelters fell into, I think, several groups.

The people who had fewer problems who were displaced by the earthquake were the first people, I think, to go out of the shelters and have some other arrangements made for them.

In Alameda County, we have certainly what I will characterize as a more marginal group of individuals, who are living in single-room occupancy hotels, that were disabled by the earthquake, who are currently in the shelters, who will need some sort of long-term housing solutions.

And I might just parenthetically add that the mental health disaster plan that was, in fact, approved and funded by state DMH is a 60-day plan. Our problems are going to be longer than 60 days, and it certainly is not to knock or, in fact, be ungrateful in any way for the assistance that we will have over the next 60 days, but some of these problems will continue far beyond that.

And then, of course, we have the people who were homeless prior to the earthquake, whose problems are compounded because the available housing stock, the single-room occupancy hotels that they could have used, are not there.

We will have some long-term mental health casualties as well. And I don't want to take the time of this Commission to describe to you how thinly stretched the mental health resources are in Alameda County. But that is not a problem unique to Alameda County. It is one that we face statewide. And generally, we serve those people who have severe, persistent mental illness. We have very little in the way of reserve to respond to people in the general community who've been traumatized by the earthquake, and, in the absence of timely intervention — and I can't stress that too heavily — will eventually develop some long-term problems.

I know that you've heard the term post-traumatic stress disorder. And in the absence of mental health intervention, which is one of those preventive areas that you can see — there are statistics that support intervention and what happens in the absence of intervention in situations like this — so, I expect that there probably will be mental health casualties. We will need additional funding in order to respond to those casualties.

There were some other problems in the system that I think we need to take note of that also will contribute to that long-term recovery, and that was what seemed to be a lack of sensitivity on the part of — and I'll group them —rescue personnel, for the residents of the West Oakland area.

Certainly, the rescue effort that was going on on the Cypress structure was a very important one, but many of the residents who were still left in that area, who'd been traumatized by the earthquake, who were watching the recovery effort, who had lights on 24 hours a day in support of that rescue effort, had their own power, their gas, turned off. It was at the end of the month — this is a relatively poor community. And many of them had food spoil. There were no feeding stations in that area, and so that was also a problem.

We are, in fact, now working with West Oakland Mental Health Center in an attempt to provide some additional intervention services in that community.

I think that just about covers any formal remarks that I'd have. I don't know if Nancy has any additional things that she'd like to add. And we're certainly willing to answer any questions that you might have.

MS. FERNANDEZ: I think one issue that Dr. Thomas didn't emphasize enough, the first one that she made, on the issue of having mental health included from the beginning in any kind of recovery effort.

It took, basically, a little bit over two days to try to actually, ourselves, get some mental health professionals at the Cypress site, just to provide the services to the recovery teams. Now, that shouldn't happen. Two days is too long a time. At two o'clock in the morning on the second day, we finally were able to accomplish something. And that's probably something that the Commission could do something about.

The other one is, there was a big problem about —an immediate problem of how to staff all the centers that all of a sudden needed mental health professionals. The one that I can remember the most was the one at the coroner's office, where you had not only personnel dealing with parts of bodies and the like, but also the families of people that didn't know whether one of the family members was in the structure or not.

So, the issue of having to provide 24-hour mental health professionals at the coroner's office and other offices — and to this day, providing, if not 24-hour, at least 8-hour-a-day, coverage at the FEMA offices or service centers, and all the shelters, that goes beyond what we have to do at the various clinics.

Like Dr. Thomas mentioned, we have groups and we have individual sessions offered to the public, and the public is making use of it. And that has an impact not only on the immediate disaster time, but also on the next six months, and perhaps beyond.

CHAIRMAN CLUFF: Thank you very much.

Are there questions from the commissioners?

Dan?

COMMISSIONER EBERLE: I'd certainly like to echo your comments that the mental health aspects need to be part of the emergency plan, I think, and included up front and taken into consideration right away, as well as the long-term crisis intervention needs.

Will you be making your recommendations to the state Department of Mental Health, and then sharing them with your colleagues also?

DR. THOMAS: Yes. We certainly will, and we've already begun some dialogue within the county, so that we are included early on in any rescue effort. It's the kind of thing that will require ongoing training and having us written into the plan right at the very beginning, so that we've got access.

COMMISSIONER EBERLE: I would like to ask one question about — concerning mutual aid. I don't know if you requested mutual aid from outside of the area to assist you. If you had, will you tell me the process that you used, or, if you didn't, what process you would normally use?

DR. THOMAS: The process that was used — and we did. We received aid from Los Angeles County, from San Mateo County, from Contra Costa, Napa, Sonoma, some of whom were mental health professionals; others were from the fire department. The Los Angeles Fire Department came up and immediately assisted us with some of the debriefing. They have a model of peer counselors and mental health professionals, which came into being in much the same way that our debriefing group is coming into being now, and that was in response to the Salidas air disaster.

The process that we used was to go through the state Department of Mental Health. They kept a listing, which they would fax down to us, of people who had experience, what kind of experience they had, what their availability was, and they helped us to coordinate getting in the kind of resources that we, in fact, needed.

In addition to that, because we were, again, stretched pretty thin, just in terms of being able to coordinate that, and they have sent to us a staff member who has sat in my office for the last two weeks, to coordinate the coming and going of the mutual aid from other counties.

COMMISSIONER EBERLE: Do you know if they coordinated with the state Office of Emergency Services?

DR. THOMAS: That, I'm not aware of. Do you know that?

MS. FERNANDEZ: Yes, they do. And, in fact, when we need some information about who next, then that particular office is the one that provides it to us, through the state Department of Mental Health.

DR. THOMAS: I'm not sure, though, that the relationship of mental health in mutual aid is as formal or as real as with fire departments, for example, when there are problems across the state. I think it's automatic that if there's a major fire, fire departments send in people to assist. I don't think it's quite that automatic with us. But, in fact, I think it ought to be.

CHAIRMAN CLUFF: Tom, you had a question?

EXECUTIVE DIRECTOR TOBIN: Do you know whether or not the costs that you're encountering will be covered by the state and federal government disaster aid programs?

DR. THOMAS: Yes. The approval — we were asked to write a plan, I think the — within the first ten days following the earthquake, which we did. We documented the expenses that we had incurred for the first ten days and submitted a proposal within that ten-day window period. We have gotten approval and an allocation letter for our expenditures for that first ten days, and our projected expenditures over the next 60 days.

I also understand that, if necessary, we can submit an amended plan.

I was just thoroughly impressed with the way the state Department of Mental Health responded, and the quickness, the rapidity with which they responded.

So, we've already gotten approval.

EXECUTIVE DIRECTOR TOBIN: I'm glad to hear that. They've been also very good with us over the last couple years as well, in working on earthquake matters.

My other question has to do with schools. Is your department responsible for schools and schoolchildren, or is that the responsibility of the school district?

DR. THOMAS: That's problematic. It's the responsibility of the school district, even though we have developed information, flyers, brochures for parents, I think, that would be useful for schoolteachers, that describe the response of schoolchildren to a disaster such as this, and also describe particular interventions that can be made, again, to prevent any sort of long-term after-effects.

Alameda County has a number of school districts. We have five special education local planning areas, and each one of those, with the exception of the City of Oakland, has a number of school districts within them. So, easy access into those schools is somewhat difficult. I would very much prefer if we were able to go into each school district, provide information, and then be called upon to provide some more direct interventions.

That's future. That is not occurring now. It's being done in a more fragmented way, in that we do have clinicians in each of our respective catchment areas who have relationships with schools, and so those schools, I think, will have more of the benefit of the kinds of interventions that we can make. But it should be something available to the entire school population.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes. I wanted to know — during the Whittier Narrows earthquake a couple years ago, a lot of the individuals who testified mentioned that immediately thereafter the earthquake, people had fears of going back into their homes, especially in the Latino communities there. And I wonder, in terms of this earthquake, a lot of that information probably, because of the magnitude of this particular earthquake, might not be as much in the forefront, considering the amount of deaths and the damage that has occurred during this earthquake. Was that a situation that was common also in this earthquake?

And, I guess, kind of, then, in coordination with that question, is — we also heard, at least at this — during this earthquake, that there were postings of information in San Francisco Chinatown that people understood as being supposedly color-coded in terms of how severely damaged their structure was, but there was nothing bilingual there. Were bilingual services available? Was there a particular problem in this area? And is it something that should really be addressed?

DR. THOMAS: Okay. I'll try to remember all the questions and respond to them.

Yes, there are still people who are afraid to go back into their homes. I don't know that it is specifically focused on language minorities.

We did produce information in two languages. We have Asian Community Mental Health Center here in our county, and they have something like a 14-language capability. So, they took the information that we had in Cantonese and Vietnamese, and then reproduced it in Laotian, Cambodian, Mien, and Tagalog, which we now have sent back to the state Department of Mental Health so that they don't have to go through that. So, we at least have got, I think, 7-language capability, in terms of response.

And the kind of information that I'm talking about elaborates on the symptoms that are normal, the kinds of interventions that one can do, both for children and adults, and then it lists phone numbers where one can go to get crisis information, et cetera. So, we were fortunate in that.

COMMISSIONER UMEMOTO: So, a lot of your bilingual services are contracted out, then, from the county, or is it part of the county structure?

DR. THOMAS: Well, we don't make those distinctions in Alameda County, in that our contracted programs represent about 40 percent of Alameda County mental health. So, we consider those services as much a part of the system as those who are county-operated. And as it has evolved in this county, the community — there are community-based organizations who have language capability that we, as a county-run program, don't have. But they're part of the mental health family, and that is a more, I think, effective way of running the system.

VICE-CHAIR RIORDAN: I think that's typical of most counties. We contract many of our services in our county, and it's just the way of delivering mental health services that we have.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Just a quick question. You have referred a number of times to mental health casualties, particularly without intervention, and long-term effects and so on. Could you, then, just in a few words, characterize some of those effects or casualties in lay, sort of everyday terms that I could understand?

DR. THOMAS: Sure. You'll have an increase in domestic violence, an increase in alcoholism, an increase in unemployment, absenteeism from work, irritability, those sorts of things. And people will be dysfunctional without realizing, in fact, why they are dysfunctional, in large part because they've not had an opportunity to talk about the kind of thing that many of us do instinctively, but for more severe forms of trauma, need to be formalized, and that is, to talk about what you saw, what you smelled, how it affected you, to sort of get rid of that information —

COMMISSIONER SCOTT: Talk it out, um-hmm.

DR. THOMAS: — and talk it out, before it becomes buried. And then you have to probe to get it out.

So, that's the kind of thing that I'm talking about.

COMMISSIONER SCOTT: Thank you very much.

CHAIRMAN CLUFF: Pat?

DR. THOMAS: Our rescue workers are extremely vulnerable to that, because they're the ones who are on, for example, the Cypress structure, crawling through, rescuing people, seeing things, experiencing things that are outside the normal range of what they experience. And so, they need an opportunity to get rid of that before it erupts in other ways, but so does the population in general. It's not as intense, but for that individual, it's very, very important.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Just a quick comment.

I wanted to urge you to contact two counties that have developed post-earthquake recovery mental health programs, being Los Angeles — which really started after the '71 quake, where they started with the San Fernando Child Guidance Clinic, and it's now — now the county has a program they developed also after the Whittier earthquake —and also Fresno County, after the Coalinga quake. There were other counties that have had other kinds of disaster recovery plans for mental health. Marin had a very good one after the mud slide. So did — rains and mud slides a few years ago — so did Santa Cruz.

But earthquakes are very specific. They have very specific needs. And those, Los Angeles and Fresno County, both have very good recovery programs.

Also, to reassure you that there are funds available for after the 60-day period, it's just a matter of process. It's through the National Institute of Mental Health, through FEMA, and the state will be most helpful in facilitating that for you.

DR. THOMAS: Thank you very much.

CHAIRMAN CLUFF: Thank you very much for coming to our hearing. We appreciate your time, and we hope we can work together to benefit the whole effort in earthquake safety.

DR. THOMAS: Thank you.

CHAIRMAN CLUFF: The next speaker is Phil Hawthorne, of the Fremont Emergency Services.

Welcome to our Commission hearing.

MR. HAWTHORNE: Good morning. I'm glad to see that you're able to keep this on schedule. It's been a very difficult morning for the folks to sit here for so long without a break.

My presentation is in three parts. I'm going to talk about preparedness, response, and then a little reflection about the City of Fremont, which is located some 30 miles south of here, just across the bay, as they say, from Palo Alto.

As the fourth-largest city in the Bay Area, it experienced very minimal physical damage due to the earthquake. And I think that I would submit that it may be some proof that structures built to modern codes on stable soils can experience moderate earthquakes with minimal damage.

The City has chosen not to build on hillsides and not to build on the mud flats or the bay fill. The earthquake hazard mitigation efforts of the City include an aggressive program of hazardous materials management, code enforcement, and emergency preparedness.

Emergency preparedness is a serious commitment of the city council, city manager, and the department heads of the City. For example, the emergency plan was presented in a working session of the department heads and city council, where the department heads made a commitment to carry out their roles in emergency management.

And the way they do it is to make resources available for preparedness. Each year there is either a three- to five-day exercise of the emergency plan, or an incident or emergency which is large enough to be the equivalent of a multiple-day, multiple-agency exercise.

This year's three-day exercise addressed the response and recovery elements of Days 7, 8, and 9 following a major earthquake event. In prior years we had dealt with the earlier days of a post-earthquake event. 160 people participated in the three-day exercise, including representatives of the utilities, volunteer agencies, and businesses.

In addition, tabletop exercises are carried out at the department level to further explore emergency operational processes.

The City has three paid positions in the Office of Emergency Services assigned to task of building emergency preparedness in the City. When emergencies occur, they guide the recovery activities. Emergency Services staff participates actively in training offered by the Federal Emergency Management Agency, the California Specialized Training Institute, and Red Cross.

As assistant director, I am paid well, treated with respect, and given the resources, people, and tools necessary to carry out my role. My office is located right next door to that of the city manager, and I communicate with him on a daily basis.

What happens with that type of preparedness? When the earthquake occurred, the first effort of City employees still at the work sites was to assure that the others in the buildings and in the areas were not injured and were able to function. Those on their way continued to assure their homes and family were safe. After assuring themselves that they were safe, the leadership group and off-duty field response people returned to their job sites.

By 5:30, a unified command structure was assembling in the emergency operations center, police were assembling reserve officers at the police station, public works at the corporation yard, and firefighters were returning to their assigned fire stations.

Staff in the EOC relied on commercial radio and television reports of what occurred in areas affected to the north, the south, and the west of us. We did not receive emergency broadcasts, those official reports based on data from either the state Office of Emergency Services or a Sacramento assessment of the disaster or the priorities for the allocation of resources.

Because of command and communications problems throughout the Bay Area, in part due to telephone systems outages, the fire mutual aid system was not immediately instituted. But our fire chief was able to reach the Oakland Fire Command and learned of the urgent need for a ladder truck and rescue tools. Truck 101, four firefighters, and command officer were dispatched to the City of Oakland as fire mutual aid. They were able to perform rescues early in the evening at the Cypress structure.

At six o'clock, the mayor, two assistant city managers, and other members of the City policy group, were assembled and briefed on the situation. By 6:30, evaluations were being made of essential City facilities, by six teams, composed of one building inspector and one maintenance worker. Police inspected every highway overpass and major roadway. By seven, we had established full contact with the hospital districts, school district, water districts, and the utilities.

The city manager conducted a full emergency operations situation briefing at 7:30 p.m., proclaimed a local emergency, requested spill checks at hazardous materials handling facilities, further inspections of bridge structures, and completion of the critical facilities inspections. A second briefing was held at 9:30 p.m.

Following that briefing, it was determined that there was no further inspections required. There had been no requests for additional mutual aid. And the next Disaster Council briefing was set for 7:30 the next morning.

At the morning briefing, the full Disaster Council learned of the actions overnight of the fire, rescue, and emergency medical teams sent to Oakland. The Disaster Council received reports of damage to City facilities and the lessons learned in the first 14 hours.

City inspectors had, in the early morning, joined staff of the school district to evaluate the school buildings. Additional in-depth review was started of all City buildings in the daylight hours. A report of the inspection of the dams from the responsible dam owners was sought. City staff and equipment were placed on an alert state to respond to mutual aid requests. A full program of damage assessment continued throughout the day.

At 4:00 p.m., the Disaster Council held its second meeting of the day. The city manager stated he was extremely pleased with the staff response the preceding 22 hours. At the city council meeting, which had been adjourned, because it had been originally scheduled for Tuesday night, to Wednesday night, he presented a report and requested council affirmation of the existence of an emergency in the city due to the earthquake and the potential for damaging aftershocks.

On the 30th of October, a serious debriefing or critique was made of the incident responses, and each department head was mandated to prepare and provide a written report to the city manager of those actions and changes that they deemed would be necessary to make them better prepared, if it were to occur again. And out of that critique came a long list of actions to be taken, areas to be researched, and ideas to be considered.

Teams have been formed to perform recovery, mitigation, and preparedness planning. There will continue to be a significant effort made to learn what worked for others and what needs to be done.

Now just a moment of reflection. In early October, I submitted a letter to the Commission noting earthquake response and recovery information voids that I believe exists. I think this last earthquake provides another opportunity for us to look to these areas.

I believe there's a need for knowledge regarding extending sheltering of victims and homeless, municipal-corporate disaster recovery plans, and to look at the effectiveness of emergency public information, and try and determine what measures could lead to economic recovery following these moderate earthquakes, which seem to have such extensive economic impacts.

The City of Fremont is beginning to frame its after-action report. I believe that the major findings will be that, one, available resources were not requested from us by more heavily impacted jurisdictions, especially in the areas of sheltering, emergency management, finance, human services, and law enforcement. The agencies needing these resources were possibly so stunned by the incident they could not cope or deal with additional resources. Or perhaps they were concerned that the program of federal and state cost reimbursement would not cover the costs of having such services. Whatever the reasons, I think those reasons need to be ferreted out and made known, evaluated, and appropriate public policy instituted.

The second thing, I think, that we're going to find from our after-action report is that a ten-year emergency management and preparedness program of planning, exercises, response, and recovery actions was a good investment for the City of Fremont. City employees, volunteers, and citizens all came together. The response plan was carried out as planned. It was used. The check-lists were followed, and the reference lists were found to be useful.

There are a great number of unknowns which will be revealed with further debriefings and analysis of these events. We in Fremont want to learn from the experience of others more severely impacted by the event so we may better prepare for a major event on the Hayward Fault. The work of the Commission is important to us. Your reports and findings serve as guidance as we continue to develop and refine the emergency preparedness program of the City of Fremont.

Thank you.

CHAIRMAN CLUFF: Thank you very much.

We were all lucky to some extent, although, as has been pointed out earlier, we make our own luck. Thank heavens for the preparedness activities that had been planned and exercised. But we weren't really tested. This was just a little reminder of something that could be much more serious.

And since the City of Fremont will be directly hit by a release of seismic energy on the Hayward Fault, maybe you could describe to us a little bit about when you are the focus of all this attention, and what kinds of things you're doing. My guess is your office is within a few tens of feet of the Hayward Fault. Maybe you could talk to us a little bit about what Fremont is doing in being better prepared for that event.

MR. HAWTHORNE: Well, if the event is a major one on that fault, I think the message I'm bringing is, it becomes a regional response has to come into play, and that we're going to look for those resources that can come in to help us. And what we're trying to train our people to do is to be accepting of those resources that we believe will be available, and know how to manage and work with those resources, not to say, "Stay away; we can't handle it."

I think that's the primary mind that we're trying to work when we work with our extended exercises, tell them, "Those resources are coming, prepare for them. You're going to be dealing with a much larger resource base than just what you have here in the city. Be prepared for it. Your media is going to be much larger than you've seen before. Be prepared to make it an effective tool for you to carry out your work."

CHAIRMAN CLUFF: Questions?

COMMISSIONER KOCKELMAN: Yeah. I have two questions, Mr. Hawthorne.

The first: did the city suffer any damage at all?

MR. HAWTHORNE: The damage in the city will be between a million and a half and $2 million, it appears now.

COMMISSIONER KOCKELMAN: What kind of damage, quickly, generally?

MR. HAWTHORNE: Oh, about a half million dollars for the school district — various facilities are reporting. The City's damages are primarily to historic structures, in terms of City property. The water district and the sanitary district had damages to their facilities. There were a number of commercial facilities that also had damage.

COMMISSIONER KOCKELMAN: Yeah.

MR. HAWTHORNE: And so, it works out about up in that range.

COMMISSIONER KOCKELMAN: Thank you.

The second question is, how many unsafe unreinforced masonry buildings might you have?

MR. HAWTHORNE: I do not have that number exactly, but I — it's less than 100 — it's because of the age of the city.

COMMISSIONER KOCKELMAN: Thank you.

CHAIRMAN CLUFF: Will?

COMMISSIONER PEAK: Yes. I believe you mentioned that you had — you don't build in the hills and you don't build on the mud flats. How do you accomplish this, considering the rapid growth of that area? And how do you plan to continue to accomplish it? I assume the area's going to continue to grow.

MR. HAWTHORNE: The answer to that is the will of the people. They voted to not do it.

COMMISSIONER PEAK: It's zoned, then, that — and that plan, that's within the City of Fremont.

MR. HAWTHORNE: Yes, sir.

COMMISSIONER PEAK: What is it? Just used for parks or left natural or —

MR. HAWTHORNE: Left natural.

COMMISSIONER PEAK: — are there uses that are allowed at all?

MR. HAWTHORNE: Agricultural.

COMMISSIONER PEAK: Agricultural only.

MR. HAWTHORNE: But they haven't found anything to plant there.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Phil, you mentioned that if the focus were on Fremont, you had trained to handle the resources coming in. How do you expect those resources would be coming in? Who would you coordinate to handle those resources? Would you be working through the state Office of Emergency Services, or would you be working throught the county?

MR. HAWTHORNE: Oh, yes. Yes, we're set up to work through the county as an operational area under the emergency plans. We're — almost all of us in Alameda County work on the basic guidance that came from the state Office of Emergency Services on the development of plans, and it shows how we reach through our operational area to the state Office of Emergency Services mutual aid programs that are in place. And that's the way we do it, through those communications.

COMMISSIONER EBERLE: Do you have agreements with the county, or do you include them in your exercises?

MR. HAWTHORNE: We have them as observers, in terms of the Office of Emergency Services, and then others who have specific roles in the emergency plan also play their role, such as medical, coroner, those specific functions which are done for the City by the county.

COMMISSIONER EBERLE: Do you get involved in their exercises?

MR. HAWTHORNE: Yes. Once again, it's in about the same way, as observers and as participants in our roles in mutual aid.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Extending it a little bit further, like when you were saying if the earthquake epicenter was on the Hayward Fault, Fremont would probably be one of the cities most drastically affected. Do you happen to know, within the county's Office of Emergency Services, if they have any contractual agreement, or some kind of agreement with other counties throughout the state, or coordinated through OES?

I know, during this past earthquake, a lot of local jurisdictions shared their personnel, from all over the state. And that, of course, is very commendable for each and every single one of those local jurisdictions, but at the same time, I think if there's a concrete plan of how these individuals, from the building officials of the City of Los Angeles, to the mental health professionals of San Bernardino County, if there's much more of a contractual agreement, or maybe not so much a contractual agreement, but a plan in which these professionals would be deployed, it certainly would assist this area in the event of a major earthquake.

MR. HAWTHORNE: I believe the mechanism is in place, and it's through the State Master Mutual Aid Agreement, which all of us are a party to. It's spelled out in the plans how we request the resources, how those requests go up the chain. I was able during this exercise to be not only in my city, but after I get done at night with my work, I would head off either for the regional Office of Emergency Services and take a shift there, or over to the City of Oakland and check in on them. I believe that the system is there, and that it is operational.

I think it could be practiced more. It's very difficult to practice it. It means a great disruption of business would have to take place to bring all of that together for simultaneous testing. But we look forward to at least doing additional tabletops in this way.

Our Alameda County emergency managers had planned to just do that sort of thing in our next few meetings. Hank Renteria and I were to develop the scenario for doing that kind of tabletop. That's, you know, the next level of sophistication, is to get multiple — large multiple-agency exercises actually operational, and at the same time continue to deliver the services that we have to deliver.

CHAIRMAN CLUFF: One last question. Barbara?

VICE-CHAIR RIORDAN: Very quickly.

While this Commission has not been down to the Santa Cruz area, do you have any knowledge — my information is that some of the smaller communities in the Santa Cruz area and further down do not have the sophistication of some of the cities in this area, and really had a difficult time getting those resources to that area. Do you have any firsthand information about that? For instance, Hollister, Watsonville, some of those areas?

MR. HAWTHORNE: Only that we thought that there would be a larger request for services from us. We did send fire engine and crews down. We did send building inspectors in to Los Gatos and on — on requests for mutual aid. We just thought there would be a greater number of those requests.

And once again, I think that's an area that needs to have a look at to see: is it because they didn't need the resources, they didn't know how to get the resources, or they were concerned they couldn't manage those emergent resources because there hadn't been any experience in that area, which the police and fire have had that experience, and so they know how it works? A finance director, having, you know, fourteen new people show up at his doorstep and saying, "Hi, we're here to help you get your costs in order," isn't used to that, and probably doesn't really know that that's available.

VICE-CHAIR RIORDAN: Thank you.

COMMISSIONER BOLT: Mr. Chairman, with your indulgence for a moment —

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: While you're here, Mr. Hawthorne, you did say, I believe, that you didn't receive any information from OES, at least in the first few hours. How did you — when did you know where the earthquake was, and how did you know?

MR. HAWTHORNE: About the way that I think everybody else did, when the television came on and started telling us what there was. We had radios and television going, and checking where it was.

COMMISSIONER BOLT: So, you relied on the regular media.

MR. HAWTHORNE: The regular media. That's why I said, you know, it was a great effort on the part of the media.

COMMISSIONER SNYDER: Mr. Chairman, may I —

CHAIRMAN CLUFF: Yes, one quick —

COMMISSIONER SNYDER: It's very quick.

With the apparent minimal damage to the city, what prompted the declaration of an emergency?

MR. HAWTHORNE: Because of the — we had resources out into these other areas. We had fire folks out and the rest of it, and we had the potential for aftershocks. It was just a prudent thing to do, to provide the protections to the city that inure from declaring a state of emergency.

CHAIRMAN CLUFF: Thank you, Mr. Hawthorne, for your time with us today.

The next speaker is Henry Renteria, who is the person with the Oakland Office of Emergency Services.

Welcome to our Commission meeting. We'd like to hear from you, since certainly Oakland was the focus of a lot of emergency services. If you could, very quickly, summarize what worked, what didn't work, what issues that you believe we might be able to work with you to improve in future earthquakes, when we will have much more severe effects here in Oakland.

MR. RENTERIA: Thank you. I hope it's not 25 words or less.

And I apologize if my remarks are going to have to be spontaneous. I didn't have the luxury of preparing any remarks, since it was a quick invitation. And as you know, we're still in the emergency response mode. Our council extended that last Tuesday into another 14-day period, and we are still —

the EOC is operating and we're still in the response mode.

So, let me try to summarize what has happened, and maybe answer some of your specific questions. I think that might be more useful to you.

I think there's a lot to be learned by what happened on October 17th and the subsequent days afterwards. There was a lot of lucky areas that I have been involved with lately, in reflecting — in that had any of these things been a few minutes before or a few minutes after, one direction here or one direction there, I think the results would have been dramatically different: the fact that that was a World Series game had an immediate and important impact on the number of lives that were lost on the Cypress viaduct; the fact that it was at 5:04 p.m. as opposed to four minutes till five, and the number of people that were still in our buildings; the fact that the earthquake was only 15 or 20 seconds long, as opposed to another 10 to 15 seconds. A lot of those factors have been looked at as we are still responding.

So, let me start at the beginning. Since it was in downtown Oakland, since it was — we were in downtown Oakland, rather, all of our staff, and we were all trying to leave early to go home and watch the World Series game, the majority of our people were already outside of the City Hall and City Hall West, which were two buildings that housed approximately 700 of our key employees. These are department heads in key departments, and they were out of the building at the time. Therefore, the buildings had very little occupancy at the time.

The fact that the initial figures that came out that 200 people had died in the Cypress viaduct was totally incorrect — and we had a very difficult time trying to control those numbers, because they did not originate from our office, and the fact — another fact is that we had every media person in town — both helped and hurt. It helped that we got immediate coverage, and we also depended on the media for all of our information, although we did have helicopters in the air and we did have fire units out and police units out, so we were able to get instant communications back.

We did not lose our communications. We were — we lost a little bit of power in Oakland on one of the major thoroughways. But for the most part, our lifelines remained intact.

Cypress, obviously, was the main response that the media concentrated on, and a lot of our resources went there. But several other parts of Oakland were severely affected, and specifically, unreinforced masonry buildings.

So, let me start — let me try to concentrate a little bit on the Cypress incident, and then I'll tell you some more about the rest of the city.

It was within twenty minutes that we knew that Cypress had gone down and the extent of the damage, and that a state of emergency had been called. We called the state of emergency almost at 5:15 p.m. Once we knew Cypress was down, that was the catalyst for us.

Mutual aid went into effect immediately. I was calling — I was on the phone calling Alameda County requesting mutual aid, and our fire and police departments were requesting through their sheriff's department and the fire association, chiefs association, and the group that does all the mutual aid work, requesting help for the Cypress area.

The media, of course, converged on Cypress, and one of the first problems we had was controlling access to the area, because of the — mainly because of the media crawling all over the structure and the volunteers who came out to help. It was quite different than going through the rubble of a collapsed building, going through this structure. There was very little rubble. It was large sections of concrete on top of other large sections of concrete.

Initially, I think, 40 — 35 or 40 people were rescued from the area, but those included people on top of the structure. The initial death count was seven, and that was all we were confirming. We had a very difficult time with the media over that, because the figures of 200 were already surfacing.

And I can't verify this, but one of the sources of information was across the bay, in San Francisco. So, how they knew that we had 200 dead, I don't know. I think part of that came from Candlestick Park, though, and the media that was there — again, based on what the amount of traffic is on that viaduct at that time of the day.

Needless to say, we were very pleased as time went on, when we discovered less and less automobiles in that structure than originally thought.

Command posts were set up immediately in the Cypress area.

One of the very first things we did — and I must compliment our staff on this — is we have a very unique public information component of our emergency plan. We don't utilize one or two people; we utilize thirty. It's broke up into shifts, three shifts of ten each, and it identifies public information people in all key departments, not just the city manager and the mayor, police, and fire. We're talking about public works, finance, economic development, all the departments, parks and rec, that have public information people. They are recruited and trained into one, main PIO component.

That was one of the first components that we activated after the disaster. The first group that we provided this component to was our police command post. They turned over all the PIO activities to this PIO component. In essence, we set up a separate press command post with a CalTrans representative, and literally corraled the media. We had them all in an area, cordoned off, and they were to stay in that area. They didn't like it at first, but that was the only way we could control the information.

We also had them work amongst themselves to appoint media people to represent the entire congregation and go on site inspections with our staff, police, fire, and CalTrans. So, we took small groups of media in periodic — I called it "feeding time" — periodic tours of the CalTrans structure so they could all take their pictures, they could all do their stories, and then come back and share it together.

And then we had organized and timed press conferences at the site so we could tell them when a body was extricated, when someone was rescued, when a car was identified.

We had immediate response from all jurisdictions, as well as outside of the country. We had Australian and Japanese people calling immediately, through our Sister City program, which also emphasizes a contact for emergency services, and received sophisticated requests — or offers of sophisticated equipment, and the equipment came in within two days, for helping us search through the Cypress area.

This was invaluable to us, and we located quite a few automobiles through the use of this equipment, sonar devices, flex scope type of cameras, because most of our firefighters — and the rescue was done by literally crawling on their bellies through 16 inches of space. And you bear in mind that some of the automobiles that were found were no higher than 6 inches after the structure collapsed on them, so there were areas that, obviously, there was no survivors.

So, the PIO component was a very important one, and it worked very well.

By the second day, the Department of Forestry was in. We had a staging area set up through our Parks and Recreation Department, providing a park for them to use. The area was cordoned off. We had to evacuate some areas, not due to structural damage of homes, but due to the near proximity to the structure, which was still in danger of collapsing, and would be until they shored it up.

So, once that system was in place, that public information system and all that in place, I think it was much more manageable in dealing with the media there.

This took away, though, from concentrating on the rest of the city. All the cameras were on Cypress, yet we had 1,400 homes that were damaged, we had 200 — approximately 220 commercial buildings, we had 12 City facilities, and didn't have the extent of damage on roads and sewers that we thought, but we did have some damage there also. All in all, our total damage estimates to this date are $1.4 billion for the City of Oakland.

The majority of the buildings that were damaged were unreinforced masonry. They were the buildings that we had identified on our SB 547 survey. We were just getting ready to go to council with our survey and the ordinance in January — I mean, December, to go into effect in January.

We had no building collapsed. We did lose, I think, two homes that — one, for sure, totally collapsed. One fell off its foundation. And there were ten homes, total, that were classified as destroyed, but only two that I know of collapsed. The majority of the building damage was due to walls of brick tumbling down, and some parapets that we lost, et cetera.

We're just now putting together all of our visuals and photographs that we've taken of all of the damaged buildings, so I'm sorry I didn't have that for you today, but maybe next time we get together.

So, those were some of the initial things that happened.

Now, one of the other problems I must share with you — and it refers to resources, since this was mentioned previously too — the Office of Emergency Services, from the local level on up to FEMA, are — all follow the same format for requesting resources: is, you go to the county, the county goes to the state, the state requests it of FEMA. We were making contacts and requests for resources from the very first day. The first thing we asked for was engine companies and truck companies from state OES, and the county forwarded that.

Our latest issue, and the latest problem we're having, is due to the slowness, lack of cooperation, whatever you want to call it, from FEMA, in our requests for help with temporary housing and sheltering of the victims of the earthquake. This is the current crisis we're facing right now, in that we've made these requests at least five times, under different or more specific categories every time I ask for it. And to this day, as we speak, we still have not received the resources we've asked for.

So, consequently, we are still dealing with 400 people in our Red Cross shelters. That number has come down from 800 three days after the earthquake. All in total, we had about 1,700 displaced people. Not all of them went to the shelters. And to compound that, and even worse, we have lost 1,000 low-income housing units, which were the units that we would have used to house some of these people. So, Oakland does not have the housing stock that other people think we do — at least not affordable housing.

And lastly — then I'll open it up to questions —the population that we're dealing with who are in our shelters are not your typical suburbia couple who was evacuated from their home because it slipped off its foundation. These are people who lived in low-income housing units downtown, residential hotels. Some of them are on GA and SSI. They pay their rent day-to-day. They only have enough rent for half of the month, and then the other half of the month they're on the street, and then they're back again in the hotels. So, consequently, they don't qualify under some of the regulations that are established.

I'm sorry I rambled, but, you know — you can ask me questions.

CHAIRMAN CLUFF: You raised the issue there at the end about the lack of response, or however you want to characterize it, from FEMA. Could you give us a little more detail? Was it a refusal, or just "No," or did they — what was the character of the nonresponsiveness?

MR. RENTERIA: There's been a lot of terms used, from denial to, you know, did they just not respond. And again, keep in mind that in this state of emergency, when you request a resource, you do it through the radio, or radio channels available to you, or the telephone. That's the type of communication we use. We don't have time to sit down and write letters and carbon-copy those letters to all the appropriate people. And that, we did not do.

So, there are some fingers being pointed now, as to, "Well, why didn't you document this?" and "Where is the letter where you request it?" I'm sorry. I didn't do that. I had other things to do.

So, the requests were made through, you know, electronic communication. We did do this: we did log every damn call we made. And that call — all those calls were logged by the people who took them. So, I do have a chronological, you know, list of what — all the requests that were made.

The initial — well, I'll go one by one. The initial request was for help with housing or sheltering of people. The response I got was, "You have to be more specific. What is it that you want?"

Okay. Then I became more specific. I wanted 200 mobile homes and/or I wanted rooms and/or barracks at military installations that will house up to 400 people. The response came back that it was not — that FEMA had done its own analysis of the area, and that available housing was here. All I had to do was find it.

When I called back and said, "Would you be more specific and tell me where it is that you found this available housing?," the response was, "We looked in the Yellow Pages and we looked in the apartment ads in the newspapers." These ads were there before the earthquake, so I don't know how many of them were ready for us.

When I went around and around and became more specific, and I requested specifically the military base, the response I got was, "We're still exploring whether this is an appropriate use of military resources."

So, interpret that as you want. It's not a denial, but it certainly is not a response to my request.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: On a different tack, I have another question.

You mentioned that you were about ready to propose an ordinance to the city council in response to the 547. Without going into a great deal of detail, can you just tell us what kind of an ordinance you were going to propose or someone was going to propose?

MR. RENTERIA: Yeah. I cannot go into detail, because that was being proposed by our public works. We were working with them. We were ready to identify buildings. We were ready to notify owners. The last glitch to the ordinance was what type of teeth would it have. And then the earthquake hit.

So, maybe the question's been answered for us.

CHAIRMAN CLUFF: But the problem hasn't gone away.

MR. RENTERIA: The problem has not gone away. And like I said, another fifteen seconds and, as Tom Tobin has told me many times, if we don't identify the unreinforced masonry buildings, the earthquake will identify them for us.

EXECUTIVE DIRECTOR TOBIN: And the problem will go away.

(Laughter)

CHAIRMAN CLUFF: Yes, Randy?

COMMISSIONER PESTOR: I just wanted to mention one thing that I thought was very helpful after the earthquake, is the information from local governments. I think Oakland was the only city or county that gave us regular information through their lobbyist, Ken Emmanuel. We were getting information daily, and sometimes twice daily, about damage to public buildings, housing, commercial, everything.

And that's what helps, I think, in Sacramento, as far as allocation of funds into the various accounts. But also, when you call a special legislative session, we need to know what the needs are, whether — how much of a tax is needed, what money needs to go into the accounts.

And, again, Oakland was the only jurisdiction that gave that detailed information. And I think that might be something for the Commission to consider in the future too, as far as — if everybody could use your example, whatever it is, it would be wonderful.

MR. RENTERIA: Well, part of the reason we did that — and I thank you for telling us that — is because we weren't afraid to. And I think, in the experience we've had with other jurisdictions and my colleagues that I've spoken to, no one wants to give wrong information. But in a state of emergency, you can't give accurate information. But you've got to be willing to stick your neck out and say, "This is what we think," because you need something to work with.

And we adopted that strategy from the very first day. We said, "If we're wrong, we're wrong, but we're going to stick to our guns and follow this track." The only area we didn't budge on was the area of the death count. We knew that there were more people dead in that Cypress structure, but we didn't know if it was 40 or if it was 400. And it was not fair to give out those types of figures, so that we stuck very closely to, "The coroner's report says this is the number of people dead."

But also, another thing on the money issue, it helped us that we've been through a disaster once already, in 1986 when we went through the floods. Oakland was the first city to declare an emergency in Alameda County, and then the other cities and the county followed suit. Oakland did recover $1.8 million in that flood. And our office was the one who took the lead on that.

Consequently, we're in much better shape now, in our DSR's and in our approach to damage assessment, because of the lesson we learned in '86.

So, I think you're going to be seeing a lot more of the figures coming up and being verified.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: I didn't have enough time when the Mayor was here to ask him this question, and you just raised it again. I am familiar with what the staff in Oakland is doing with regard to the URM ordinance in response to 547. They're doing an excellent job.

MR. RENTERIA: Thank you.

COMMISSIONER FRATESSA: The other shoe, however, is going to drop, not in their bailiwick, but it will come to the council. And the question on that ordinance is going to be, "Will you make the retrofitting of the URM's mandatory, or will it be optional?," and the social and economic impacts of that.

And I was hoping to have a chance to ask the Mayor if there's anything this Commission can do to assist them in making that decision, because that is — the nuts and bolts, I think, are well taken care of by staff, but the political decision, "Is the retrofitting of the unreinforced masonry buildings going to be mandatory?"

MR. RENTERIA: Yeah. I would answer that question by, "Yes, I think there is something the Commission can do." I'm not going to be specific and say what it is right now, because I've always felt the Commission was there.

When the law was first introduced and we were trying to explain it to the officials, it was difficult, folks. It was very difficult to get them to buy this. But through the efforts of BAREPP and Tom Tobin and some other people, we were able to bring that information and keep it in front of the department heads, especially public works, planning, and OEDE and OCD, who are the main departments who will be dealing with this.

So, I think the window of opportunity, as I call it, is wide open for us right now to look at all these issues.

The city manager did put together, early last week, a major policy task force, made up of all the department heads involved in this. We are looking at issues — in fact, I've introduced a tilt-up building issue, myself. I said, "We didn't lose any, but they're the ones that are going next. So why not just open up some more doors and look at some of these other issues too, not just URM's?" But this policy task force is going to be addressing all of the major decisions that we have to make in the next few months regarding earthquake safety.

CHAIRMAN CLUFF: Bruce?

COMMISSIONER BOLT: I'm interested to know what happened twenty minutes immediately after the earthquake. You sketched for us the picture of City Hall, a lot of people had gone because of the World Series and so on, but there were people still around or going, there were department heads and so on who felt the earthquake and presumably wanted to get to their desks. Did people go back into City Hall?

And before you answer that, I'm interested, then, in how you managed to get the City to work afterwards at all, when people couldn't get back to their offices to get phones. I have heard that the City, even now, is really just working at half steam, for this very reason, that people can't get back into their offices, and if you could just comment on that.

MR. RENTERIA: Oh, yeah. In fact, I apologize for leaving that component out of my opening remarks.

That was my other crisis, is we didn't have City government housed any more. We were the professionally homeless. We were out there without — you know —

(Laughter)

MR. RENTERIA: — office space.

One of the things that came through — and another two things of luck, I think — one of them — let me just briefly — because I saw Pat here, and I need to mention the role of the Red Cross — and the Red Cross, especially in opening up the shelters, was incredible. Luck, though, had to do with the fact that the local Red Cross chapter manager was being evacuated out of her building right next door to City Hall. And I grabbed her and I said, "Go to the EOC," because she couldn't get back to her office. And she stayed there for the first three days, and we were able to coordinate activities wonderfully that way. And they're still helping us with this sheltering issue.

Back to the issue of evacuating City Hall. People did evacuate. And we have had drills for City Hall, and people in the building know how difficult it is to evacuate that building and the other safety issues regarding the — how old the building is and how narrow the fire escape is, and these things that we have already identified and been working on. So, people voluntarily evacuated that building quickly, and no one had any intentions of going back into that building at that point.

And it was interesting, because City Hall didn't lose a lot of — didn't show a lot of structural damage from the outside. There were several cracks, and plaster fell inside, but unlike City Hall West, which is the building behind City Hall that suffered severe damage — and that building, I don't — at this point, I can say I don't believe it will be fixed, it will be retrofitted. It probably will be torn down and replaced. People did not go back in.

Another interesting and good fortune component is that we had our Pac Bell representative, who, unfortunately, was in

San Francisco, I think at the game. He found his way back to our EOC about four hours into the emergency, five hours, and then he immediately started using his role as a Pac Bell representative to get us cellular phones. We had 150 cellular phones delivered to my office within two — within what? — 24 hours. That was what I was able to use for our department heads, and therefore, their offices became their cellular phone.

And we immediately put together a call-up list of that. And as employees were being recalled — we do have other buildings that were not damaged, and they were able to report there. The EOC is in the fire — main firehouse, so people were able to report there. The EOC became our City Hall too. Our first council meeting was held there.

Communication, to me — well, there's two components, to me, that are most important in an emergency, the management of the emergency, and the ability to communicate. We had the management together at the EOC. We got the phones to communicate immediately. So, those were two main components that all worked well.

We are committed to keep City offices in the downtown area, so we have now secured office space for everyone. There are some cosmetic things that have to be done to move people in, but we've located space for everyone. And the first week, it was hectic because people were literally shacking up with each other. I had the city clerk and the city attorney sharing an office, and I had — public works was in my office, because I was at the EOC.

(Laughter)

MR. RENTERIA: It was wonderful. It was really interesting. It did bring our City departments much closer together, literally.

(Laughter)

CHAIRMAN CLUFF: We need to break for lunch, and one last question.

COMMISSIONER WASTE: In our testimony in San Francisco, we heard something, and you've repeated it this morning, and that was the role of the media. Reference was made to the fact that they were of tremendous assistance, a great aid, and a darned nuisance.

Your office, it seems to me, is the place where this kind of thing comes through. It's the focal point. Is there some sort of an agreed-upon plan in advance as to what we do in this kind of a case? Your bullpen idea was very interesting. But is this part of the planning, or did that just happen?

MR. RENTERIA: No, no. That was part of the plan. That's part of our — we took the multi-hazard functional plan, which everyone has heard of, and we extracted the PIO component and organized and put together a public information operations manual. That's the — that's really the book that is used to respond in an emergency. The emergency plan sits on the shelf, let's face it. It's a compliance document. All it's good for is you hold it up over your head to keep anything from hitting you because it's so big and so heavy.

These operations manuals, which are derived from the emergency plan, are much more specific. They had lists of people to call, who to call, what to do, where to get what you need, those types of things. We had developed a PIO manual, we had developed the emergency operations manual, the EOC manual, the fire and police had their own, and we were still working on the others. But this one component is where this bullpen idea came out of, the use of the EBS system — and I may comment on the EBS.

Obviously, we activated it immediately, and we sent out our messages. But common sense tells you that if the other stations are available, they're not going to sit back and let the EBS give out all the information. So, you incorporate them also into your — into your network.

And let me also add another plus for the fax machine. That little piece of machinery proved invaluable for us during this disaster. All of our departments had one already, and we had some portable ones. We were able to fax public information, news releases, and reports immediately to the media. They knew where — since we had them all corraled at the Cypress structure, we were able to feed them there too with this information. So, it was helpful to have them all in one place.

Back to your question on agreements. I wish we could get to the point of having some sort of an agreement with the media. I think it's almost impossible to do that. But if you can get local offices to work with the local media and educate them as to their need, and which we were trying to do to, is invite them to attend our training programs, and include them in the training as instructors too — they have valuable information they can teach us.

It's the whole idea of networking. That's really what I'm getting to. You've got to do networking, and it has to be done by an office that has total responsibility for this.

And one final comment on that is that those jurisdictions — and someone asked earlier about what happened in Santa Cruz, et cetera — those jurisdictions that do not have full-time OES offices are the ones that have the problems, because they don't have one person devoted to do this. They have — they wear three or four different hats.

When you have an OES office that's independent, and it has the authority to do it too — my office is under the city manager's office, San Francisco's under the mayor's office — those are the type of offices that'll get things done. An office that's located in, you know, the planning department or in the fire department, you're not going to get anything done that way.

CHAIRMAN CLUFF: Hank, we have one last question we need to ask you, and that's your advice. We have lunch arranged for the Commission, outside and to the right, but there are others who are here that can't share in that lunch. Could you advise them on —

MR. RENTERIA: The Red Cross has been feeding us all this week.

(Laughter)

MR. RENTERIA: No! They should have arranged for that!

(Laughter)

MR. RENTERIA: Actually, there's an excellent Korean restaurant within walking distance, right across the street on Lakeshore, called Sorabol's, I would highly recommend if you're into Korean food. There's a couple of others in that area.

If you walk back this way, there are some more in the Broadway area and off of Franklin. There's another Japanese restaurant, or a Chinese restaurant, off of Webster and Franklin, I think.

And there's also a restaurant in Lake Merritt here, right on the lake. There's a little sandwich shop. They're all within walking distance.

CHAIRMAN CLUFF: Okay. Thank you very much. We appreciate your taking time to come to talk with us.

MR. RENTERIA: Thank you.

CHAIRMAN CLUFF: We'll recess until one o'clock.

(Thereupon, at 12:15 p.m., the Commission
adjourned for lunch, to reconvene at 1:00 p.m.)

—oOo—AFTERNOON SESSION
—oOo—

CHAIRMAN CLUFF: Let's take our places so we can keep moving.

(Pause)

CHAIRMAN CLUFF: We're all set?

Okay. We're back in session.

The next speaker is Mr. Roberts, and he is approaching the table now.

We welcome you, Charlie Roberts, the Director of Engineering for the Port of Oakland. The Port of Oakland was certainly one of the facilities that was hit by the earthquake, and we'd like to hear briefly what happened, but what worked, and what didn't work, and what you're doing about understanding those things, and how we as a Commission can work together to not only recover from this earthquake, but to look at future earthquakes that we expect to be much more severe, and hopefully, either prevent or minimize the effects of those earthquakes.

MR. ROBERTS: Thank you, Mr. Chairman, ladies and gentlemen of the Commission.

Mr. Chairman, I'm going to give you a copy of this set of photographs. It's really more of a PR thing than it is an engineering. We have multiple photographs and videos, if you'd like to see them, and maybe the Commission would just like to look at these.

CHAIRMAN CLUFF: Thank you.

MR. ROBERTS: I appreciate this opportunity to speak to you, because it gives me a chance to tell you about my biases that worked, and you always feel good when that happens.

I would say that, first of all, you may know, our present estimate of damage at the Oakland Airport is $30 million, and at the terminals, $75 million. We sustained very little damage in Jack London Square. The new buildings there all came through with no problem at all. The present office building lost all of our shear walls, or all of our shear walls are damaged, though we still think we have 75 percent of the shear — that'll have to be rebuilt. That's a very old building, as you know. It was a — you may know it was built originally as an icehouse, back in Jack London's days.

So, our main damage is in the — is in the marine terminals, and I'd like to talk about them first.

I have a strong bias against batter piles. I feel very strongly that batter piles should not be used in an earthquake area. I feel if you can always predict the direction of the earthquake, you could probably use them, but other than that, you can't.

The Howard terminal, which was designed in 1980 and '81, is a state-of-the-art terminal built specifically to take the earthquakes we have in this area, and specifically in a type of design to do that.

Our terminals are built as a marginal wharf — I'm going to try to use words here that are descriptive — and that marginal wharf is a concrete structure which has piles into the channel, so that there's 40 foot of water along those front piles, and the rear piles are in a rock dike. Behind that rock dike is a fill, and on top of that fill is the yard. So, the nomenclature here I'll use is an apron, the rock dike, the piles, and the yard.

Also on the apron, or in the front of that apron, there is a crane rail to carry a gantry container crane, and behind the apron there is a crane rail to carry the rear bogies of the crane. That gauge is 100-foot. We standardized in '80 at 100-foot gauge for our gantry cranes. We have some cranes that have less gauge, but all of our new cranes and all the cranes that have been built since '80 are 100-foot.

So, in most of the cases, the rear crane rail is not on the apron. It extends — it's on the land — it's on the yard behind the apron.

The damage that we sustained was to the Seventh Street terminal, which, as you may know, is a hydraulic fill built from the dredgings from the BART tube. The Port built a dike, 150 acres, and that hydraulic sand was pumped in behind that. That particular Seventh Street terminal has two subterminals, one that belongs to Matson, which is about 70 acres, and one which is called the — we call the public container terminal, that's operated by a stevedoring company, and it's about 78 acres. It's closed. It's the only terminal that we have closed.

The apron on that particular facility, which runs some 2,400 feet and contains two modern berths — we had three berths there before, but the new ships have gone from 800-foot to 1,000-foot, so we've changed to two berths there — is completely shut down, and the reason is twofold. The rear crane rail was sitting on a slab, 2-foot by 5-foot, of reinforced concrete, that placed on the hydraulically filled sand. That slab, for its entire length of some 2,200 feet, has subsided about 15 inches, not uniformly.

The rear line of piles, which we designed to hold the stiffness of the apron, was a double row in both directions of batter pile, 16 inches square, reinforced concrete. We believe that every one of the batter piles on the land side is broke, and about half of the ones on the water side are sheared. We have also sheared some of the supporting piles, the vertical piles, under the apron.

We had substantial subsidence in that yard where that hydraulic fill was to have gone.

At the outer harbor, which is also on fill, but fill placed by dump trucks over the years, that particular stretch, which is 4,400 feet, and now four berths, was built during World War II, did not subside. There is a grade beam type of rear crane rail there, and it did not subside. In one joint, something happened and the joint kicked up. But outside of that, we had no damage to that crane rail that was on old — and I won't call it engineered fill, but it was not hydraulic fill. It was truck-placed fill.

We had no damage to the — we had minimum damage to the piles in that area, and they are straight piles.

The Howard terminal, which I started to speak of, is designed with a — oh, I want to say one more thing.

Those old aprons were built with a cast-in-place concrete slab and 3 foot of aggregate on top of the concrete slab in which to place utilities. That's a terrible mistake. You put so much weight up high. That really causes problems. And that may be the reason we had problems at Seventh Street and not the outer harbor, because the outer harbor doesn't have that 3 foot of aggregate on top of it.

At Howard, the design is a line of 24-inch prestressed concrete piles on 5-foot centers. That's the rear roll of the apron, vertical. The piles ended under the apron are vertical, on 20-foot cast-in-place. That's a specific — and the piles are 80-foot or longer, driven to bed gravel.

The rear crane rail, then, is about 25 foot off of the back of the apron. There was asphalt placed between that crane rail, and the crane rail is on 24-inch prestressed concrete piles, I believe on 10-foot centers.

There's pictures of what I just — there's one picture in there of what I just described to you, where it says the Howard terminal.

We predicted that that asphalt between the rear crane rail and the apron would subside 6 to 8 inches. It subsided 6 inches. We have replaced that 6 inches with asphalt.

Behind the crane rail, we got considerable subsidence where the railroad is, and we're going to have to raise the railroad to bring that in.

My point here is that we feel that we have successfully, at least, taken the first test to design a concrete apron to take a seismic load by stiff — placed close on centers cast-in-place piles with a minimum thickness of the apron which is up above the dike.

We accept the subsidence as being one of the things that's going to happen that's not going to do any more than have to make us repair it. And we feel that if we can predict the subsidence and then be ready to come in and repair it, that's acceptable to the operation of the terminal.

We can't accept subsidence in the crane rails, but we can accept some subsidence in the yards.

With that discussion, then, I would like to go to the airport.

At the airport, we have a 10,000-foot runway. 3,000 foot went completely out of commission — you will see some pictures. We had some absolutely traditional fissures out there. All of you that have seen the movies where you see the earthquake and the man falling into the crack, well, we had some of those kind of cracks out there.

I always told my wife, "That's just a movie," and she went out and looked at those cracks and said, "Yeah!"

(Laughter)

MR. ROBERTS: The interesting thing is — and it would be — it's an interesting study that we're going to follow up on — is why did 7,000 feet not have a crack in it? And that's the first 7,000 feet. Most of — 95 percent of our aircraft take off from the east to the west. On the east end of the runway, the first 7,000 foot, we had no problem.

The next — by the way, we had just done an overlay, an inch rubber overlay of that runway, just before this happened — that showed us some interesting things too.

So, the first 7,000 foot is in operation and stayed in operation. The next 3,000 foot, to make the 10,000-foot runway, is completely out of operation due to fissures.

I mean, not one or two; it's fissured all over and on both sides.

The first area where the — when, apparently — I wasn't here at that time — when the runway was first built in Oakland, starting in '59, it was only going to be 7,000-foot runway, and the first fill was placed by a clam picking up the mud in that area that's full of oyster shells, and that was placed, and we had an engineer named Roy Clark, and he believed that whatever else you did, you compacted. And so, he even compacted that early placed mud. I think that's significant.

The next 3,000 foot, which was a last decision that we'd go to a 10,000-foot runway, was hydraulically placed. And even the dike was a sand dike. That area of that hydraulically placed sand is where we had all the trouble. We lost — we fissured the dike, the runway, taxiway, the connecting taxiway, and the rough in between.

We repaired the dike immediately. The dike was built out of what they call quarry run, which means it can't be sold to the county for road fill, but it makes a good dike because it's got clay in it — that fissured on the front face of the dike and two or three places on the dike.

Now, we had had that dike break before, or fissure longitudinally before. And I think that's because it was originally built by just placing mud on top of mud. And as we load it — and we continually load it every year — and it sinks down, it's just fissuring out. So, it's not surprising that would fissure. We went in, grubbed it, in effect, and put it back together and fixed the cracks.

The runway is critical because the air carriers' that operate out of Oakland — and we're one of the bigger air carriers — heavy load begins on about the 20th of November, when the Christmas rush begins. And they can't take off on that 7,000-foot runway. They need about 8,500 foot. We have a change order out to O.C. Jones, who is the contractor doing the work on the runway, to repair 2,000 foot of that runway by the 19th of November. And they're on schedule and moving fast.

The repair goes in, takes the — by the way, those fissures are very interesting. They weren't straight down. They went straight down through the asphalt, and then all went off at the same angle. We think we can explain why that — also, you should know that the hydraulic — the sand layer is on a one percent slope, so everything went in that direction.

We're going in, taking out the asphalt, 4-foot wide, the base, filling the fissure, covering it back up, putting the base and the asphalt back in. When we get all those cracks — and those cracks go — some of them go longitudinal, right down what looks like the paving line, some of them diagonal across, some of them zigzag — it's interesting. You can spend a half an afternoon out there figuring out why it cracked in that direction, and we've done that.

We'll fix those cracks, and then we'll come back and overlay, and we'll give the airport operations about 9,000 foot of runway, or 8,500 foot of runway, to get back in operations.

We will then do a deliberate design and bid to fix the taxiway, connecting taxiway, and the last 1,000 foot of the runway. I want to design — I'm going to try to design a dike to be placed on each — a rock dike to be placed on each side of the runway, underground, of course, to, in effect, contain the area under the runway. I would believe that by doing that, if we get liquefaction, we're going to hold it there, and it's just going to stay there.

The design of that dike, I have — I'm looking for anybody that's ever done it. I've seen the work that was done at Charleston, where they actually put in rock columns to sustain a yard. I'm going to look at rock columns for the dike, vibrate the rock columns and see if I can bring the sand in hard enough to create a dike. That's under design at the present time.

CHAIRMAN CLUFF: Mr. Roberts, thank you. It seems to me that adding to some of the things that you're already doing in taking a look at all of the facilities that are under the Port of Oakland, it sounds like you've got a good feel for what happened and so forth. But it would seem to me this is a unique opportunity for an agency such as yours to really carry out some specific — I don't like to call it research, but it's applied research, to really fully understand all of the characteristics, and make sure that — what didn't fail, what did fail, we understand all of the physical parameters involved so that this can be passed on to others who have to build in places that are sensitive to ground failure.

And I'm wondering to what extent you might want to consider that.

MR. ROBERTS: Well, we're certainly going to do it to the maximum we can.

Right now, we've been preparing — I've got to learn to teach you the language — DSR's, and you've got to get your DSR's done before you get FEMA money. So, DSR's, detailed survey reports, are more important than anything else.

As soon as we get that done — and we are actually putting in some money — we're going to do at least research on that fill at Seventh Street, on that subsidence. We want to do a detailed study of those stiff vertical piles to be sure that they didn't break, which we say they didn't. And you realize a lot of that means we've got to get down and get under and dig up, so that we will do that and record all of that.

When we do the work at the airport, other than the emergency repair, we're going to do quite a bit of cross-section. By the way, we dug several trenches at the airport before we went in there, to look at it, and we've recorded all of that. We also are going to have several — everybody in the world has offered me help, and I appreciated that, and I'm sincere about that, but I also know that we've got something here that all of you engineers want to look at — in order to get them off my back, all the chief engineers on the West Coast are coming in tomorrow, and we're going to take them and give them four hours to look at everything. That will save having to do them one at a time, since they're all personal friends.

(Laughter)

MR. ROBERTS: That will be an interesting afternoon, tomorrow afternoon, I'm sure.

The answer to your question is, we need to develop a good program to do that. We haven't done it yet, but I plan on doing it. And any suggestions or help that you could give us, we'd welcome.

CHAIRMAN CLUFF: Fine. Thank you. I'm sure you might get some specific ones from some of our commissioners.

Bill?

COMMISSIONER IWAN: This is maybe an unfair question to ask a director of engineering, but there's no one else on the program that represents the Port. And I wonder if you could just speak to us a little bit about what you feel the total economic impact might be to the Port's facilities as a result of, you indicated, some shutdown of certain parts of the Port, some restrictions to the airport. I suspect also, the loss of the Cypress viaduct may influence the traffic to the Port. I don't know. Have you been involved in any discussions that might consider that?

MR. ROBERTS: Yes. The Port of Oakland is operated by what we call an operating committee, which is seven of us, and I'm one of the members. And that's been one of the serious things that we've looked at.

To take each one of our points, we are doing a detailed study of what the loss of revenue is. That'll be part of our concern dealing with the earthquake with the FEMA money. And we also had the insurance against loss of revenue on our cranes, so we'll have to look at that.

There is some loss of revenue, not at the airport, unless we can't get that runway in in time for Christmas. What happened to us is we stayed in operation on 7,000 foot of runway, and a lot of the traffic that couldn't go into San Francisco came to us. So, so far, passengers is up, not down.

Air cargo is a big income to us, and that's very important. It just — it just can't rain for the next week. I can make it if it won't rain this week.

At the terminal — we lost one terminal, and that terminal is worth about $2 million in revenue a year. We've shifted all of that cargo to other terminals, but, of course, very interestingly — Tom, we used to say what the capacity of a terminal was and whether we were at capacity — I can tell you with no doubt that closing two main berths, we are out of capacity. So, we had two extra berths. Right now we're at full capacity.

And that means that those tenants are losing efficiency, and they're going to expect us to lower their wharfage and so forth accordingly, and we have — I don't want to talk about that too much, but that's going to happen.

So, yeah, there's going to be a loss of revenue.

The rerouting of the traffic around the loss of the Cypress has been an inconvenience. It's starting to work. In other words, truckers are great people for finding their way around. It takes them a while, but they're getting in there. We have a real serious problem with — Maersk does a major part of their shipment through Santa Fe through Richmond. Now, there's been a — you can get into a discussion about Southern Pacific giving Santa Fe an opening into Oakland, and we've been worrying about that for a while — but that's been trucked to Richmond. There's no way up there.

What CalTrans is trying to do is give us a lane that will come down 80, take a right on 80 toward the Bay Bridge, left across the other lane of traffic, which is not operating now — we found an old gate in the Army's fence, and go through there and come in on Maritime Street to get to Berth 24. Do you understand what I'm saying? I tell you that in detail just to show you what that does.

So, that — but that's very unsatisfactory, because it's one way. And the first thing we ran into was East Bay MUD saying, "You're not going to take those heavy trucks across our outfalls," so we had to solve that.

The Operation Committee, to answer your question and sum up, is going to do a very detailed study of what the actual effect on revenue — the Port of Oakland direct effect on the Bay Area economy is $5 billion a year.

CHAIRMAN CLUFF: LeRoy?

COMMISSIONER CRANDALL: Mr. Roberts, the EERI Investigative Committee would be very interested in the lifeline and geotechnical aspects of what's happening there. Have you been approached about contributing information to that study?

MR. ROBERTS: No. No. And it's probably because they're just being kind to us. But we'll be glad to talk to you.

COMMISSIONER CRANDALL: Good to hear it. All right. Well, I'll see that somebody gets to you. Thanks a lot.

CHAIRMAN CLUFF: Yes. Commissioner Bolt?

COMMISSIONER BOLT: Last week we heard an account of what happened at San Francisco Airport from the manager, and my understanding is that your airport was always in operation. Is that — that's correct?

MR. ROBERTS: Well, we closed down for a short time, just to do an investigation.

COMMISSIONER BOLT: A check.

MR. ROBERTS: I think we closed down on Wednesday morning to take a real good look. We looked at it Tuesday night —

COMMISSIONER BOLT: Yes.

MR. ROBERTS: — but then we took a real — and then we were back open. I don't think we were closed down but four hours.

COMMISSIONER BOLT: So —

MR. ROBERTS: I really can't answer your question, because I was in Tampa, Florida, at the time.

COMMISSIONER BOLT: Oh, I see.

That gives one some reassurance, when you know that there's a second airport that's available, of course, in these kinds of emergencies.

Something that disturbed me about the San Francisco Airport story, and I'm sure many others, was that the main traffic control tower was out of action. The main window exploded. You probably know the details. But the photograph that was shown to us by the manager showed a lot of the equipment came down within the tower.

Now, it would seem to me, anyway, that that should not happen, that the people that run major airports should really give a lot of attention to preventable damage of that kind, the proper supports, just harden the control towers so that they can go through very high accelerations indeed. And that, as you know as an engineer, is not an impossible task. It would cost a little more money than usual.

And I put it to you that this is something that we might expect San Francisco Airport and Oakland Airport to be able to assure us, that those control towers are really not just to code, but really be looked at to be able to go through strong ground accelerations. I'd like to get your comments about that.

MR. ROBERTS: Both towers — we have two towers at Oakland, what we call North Field, which is general aviation and commercial jets, and then we have the South Field, which is the international airport, the commercial airport. And both towers were built by the Engineering Department of the Port of Oakland, and both of them were looked at for that seismic reason.

The tower at the North Field lost window glass on one side. The tower at the South Field suffered no damage at all. We're looking at it to see why. They are different designs. I do know that the windows on the tower at the North Field are about twice the size of the windows on the tower at the South Field.

CHAIRMAN CLUFF: Further questions or comments?

(No response)

CHAIRMAN CLUFF: Thank you very much for taking time to come here to speak to us today.

MR. ROBERTS: Thank you all for asking us.

EXECUTIVE DIRECTOR TOBIN: Yeah, Charlie, thank you.

Charlie, you should all know, used to be my boss. And so I — and I still sit up straight when he talks.

(Laughter)

EXECUTIVE DIRECTOR TOBIN: Thank you very much for coming, Charlie.

CHAIRMAN CLUFF: The next speaker is Blake Rothfuss, who is the Structural Engineers Association of Northern California Disaster Emergency Services.

And, Blake, if you could be very brief, tell us what you learned out of this event in terms of your function, and what we need to hear about in terms of improving your kinds of activities, and how we as a Commission might be able to assist in that.

MR. ROTHFUSS: Okay. Thank you.

I have a lot of suggestions, a lot of comments, and as the chairman suggested, I'll make them as brief as possible. There will be a written-up document supplied by the Structural Engineers Association, which will become available to the Commission if you so desire. That will be out by in a month from now.

I'd like to start off with the — we have a volunteer organizations through the State of California Office of Emergency Services. The Structural Engineers Association and the American Society of Civil Engineers supports that — the OES with volunteer engineers, some of which you've heard about in the media of late. Volunteers are all over the place doing inspections for residence or commercial building owners.

What I'd like to say is that the plan calls for the OES contacting us, and then we mobilize our volunteers and send them out into the field. It didn't quite work that way. OES had a change of personnel, and the person who was going to coordinate the engineering effort didn't know anything about the engineering effort. And so, when I called in Wednesday morning, Day One, I had to educate him and fill him in on what was going on.

So, probably my first recommendation is that the OES develop an emergency action plan with step-by-step procedures that anybody can pull out of a binder and run down through the things they're supposed to check off on, so that they can — anybody can pick up the binder and follow through with the procedures, getting the right people on board, and getting the action taken care of.

One of the best things the OES requested of me was to send a coordinator into the OES office. And that provided me with some firsthand information of how the OES handled the emergency and the volunteer engineer program. And I'd like to say that it worked very well once the dust settled, so to speak, and we were able to get in there and bring volunteers in.

The next thing that has to happen is the jurisdictions have to call the Office of Emergency Services and request assistance. One of the problems that came about was that the local jurisdictions either were unaware of or ignored the state plan, and tried to recruit their own volunteers and put them into their assessment program. For instance, the City of San Francisco and the City of Oakland was taking volunteers as of Wednesday morning, just sending them out into the streets with an address and say, "Can you look at this building? Is it safe, is it marginal, or is it an unsafe structure?"

And that poses two problems, the first of which is the liability for those engineers — unless they're sworn in by the State of California, they are not able to receive — be protected by the state workmen's compensation or the liability insurance that the state provides for state employees; the second of which is that those engineers weren't recorded in those jurisdictions, so there is really no record that those guys were ever there. And so, when the residents have questions about their structure, "Why was my building posted limited entry?," which is the yellow placard that some of you may be familiar with, there was really nobody to contact, because they couldn't track down who was the inspector.

And on Days One and Two, those were very important issues.

Some inspectors signed their own names and put their phone numbers down, and then received less-than-kind phone calls from the residents, saying, "Why did you do this to me?," "What's wrong with my structure?," and so on and so forth, which caused a lot of headache for those engineers.

Furthermore, the — well, in addition to, we had the recent ATC 20 project, which was a project supported by the Office of Emergency Services to create a criteria for damage assessments, to provide rapid walk-through assessments for structures, and then more detailed assessments, so that we could do a first course and get some preliminary cost estimates or figures of how many structures are down, and then do some further detailed work.

In the publication, there's a great deal of detail and commentary on things the engineer should look for in the structures, you know, diagonal bracing, the cracks in shear walls, just — there's thousands of pages — well, hundreds of pages of information that an engineer would have to read through and become familiar with, before they could really implement the guidelines in the ATC.

And as far as utilizing the ATC in the future, which the OES has decided that that's going to be their primary document for assessments, I'd like to recommend that we have some further extensive training for volunteer — or for engineers on how to use that document. I received several comments from engineers who said — one person said, "It was very confusing; even after reading the ATC publication, I wasn't clear whether a given building should be red, a green, or a yellow posting." He just threw his hands up in the air. Another engineer called me and said it was right on the money. And so, I think the state's money was well spent in preparing this document; we just need to educate the engineers.

Furthermore, we have to education the jurisdictional building officials in how to use that document. The City of San Francisco interpreted the limited entry in a way which I think poses a great deal of threat to the public safety. And, for instance, Mr. Evans, the director of San Francisco Public Works, issued a statement that the limited entry would be defined as "specific, designated portions of a building may be unsafe; residents should consult with the building manager or owner regarding the building's current status; access is no longer restricted solely to authorize personnel, as previously posted." And that's the end — that's his definition of the limited entry.

This posting covers only a portion of what the limited entry was intended to accomplish. On many occasions, the residents occupied a structure posted limited entry, and were unaware that there were unsafe portions of the building. The unsafe portions were not roped off or otherwise identified to those people, or even to the building managers. The limited entry placard was intended to allow residents to enter the residence only to retrieve personal belongings, and then to egress.

And so, you know, the policies of implementing the assessment programs varied from jurisdiction to jurisdiction, and also from day to day. This was issued, I think, on Day Four from San Francisco, but Day Three they had a different interpretation. And so, it became very frustrating for the volunteers who were there for two- to three-day stints, trying to be consistent in how they were posting structures.

In addition, the City of San Francisco developed a policy, in at least some areas, where they preferred to shore up structures instead of closing streets. And generally speaking, the residents of those areas figured if the street was not closed, or posted closed, or somehow barricaded off, they figured it was safe to walk on that street, regardless of what falling hazards might be above them from structures. And the City tried to get into an extensive shoring program trying to take care of those structures.

We had several volunteers who called me to try and find out who they could call to get right to the top of this policy, because they were concerned with the falling hazards, and the public safety was severely jeopardized in regards to that.

So, as far as the appropriate use of volunteers goes, after the first four days, there had been several levels of assessments done: first, a drive-through, which the City officials generally did, either Tuesday night or Wednesday morning, just to get a feel for what was going on; and then, as time progressed, the investigations or assessments became more detailed.

But one of the requirements is that residents have structural investigations done of their structures. And jurisdictions requested the volunteers to perform those detailed investigations, and that was beyond the scope of what a volunteer is supposed to be doing. They're supposed to just assess a structure for its life safety hazards and potential hazard, and that's it.

The cities were calling them for recommendations on demolition, and for shoring, and for retrofitting structures. And we had some engineers who took that liability upon themselves, and other engineers who just said, "I can't help you," and walked away. So, again, it poses some frustration to the volunteers when the city is asking them to do something that they're really not supposed to be doing. So, I think that comes into educating the jurisdictions on what the volunteers can do and what they cannot do.

As far as OES, the management of OES, goes, I think we need to improve on the teamwork between the regions. In the Region 2 office, everybody collected very well together, and we had the National Guard people and the Red Cross people, and they had their big command center, and everybody was working well together.

CHAIRMAN CLUFF: Where is Region 2, Blake?

MR. ROTHFUSS: That's in Pleasant Hill.

Okay. And Region 1 is based out of Los Angeles. And there didn't seem to be a whole lot of communication between the Region 1 staff and the Region 2 staff. For instance, on Day One, Wednesday morning, Jim Alexander mobilized engineers from the southern section, put them on a C-130 transport and shipped them up to the Watsonville area. But he didn't tell Region 2 that he was sending engineers in. So, when Watsonville contacted us at Pleasant Hill and said, "We need engineers," we sent a contingent of engineers down there.

So, we, in effect, had double resources in an area that — well, we had more engineers than we needed there, and we had a shortage of engineers in Oakland, and then eventually in San Francisco, so that there needs to be some coordination made there.

Also, there seemed to be some problems with implementing the ATC 20 project from the Region 1 standpoint. The scuttlebutt was that the Region 1 management didn't support the ATC 20 document and would not send any volunteers to a jurisdiction which was using that document. And that took a couple hours of phone calls to get it wrangled out. And I wasn't privy to those conversations. That's what I was told, one reason the engineers were delayed.

By the time Region 2 got around to calling Region 1 for assistance, we were at Day Four. And the reason for delay that I was given was that Region 2 didn't have the money to pay for the transportation of those engineers up to Northern California.

I think what it ultimately ended up being was they didn't have the proper accounting set up so that they could take care of it. I think some financial aspects of the emergency response needs to be improved on the OES level, so that they know what monies they have available, or at least what accounting they can charge things to and bring people in and take care of their expenses, and the economic issues.

As far as the Structural Engineers Association goes, I'd like to recommend a more aggressive recruiting policy for volunteers.

When we finally did bring engineers up from the southern section, we gained approximately 100 engineers who stayed for about five days, so that's 500 man-days. We had total requests for engineers of 2,800 man-days. And so, you can see by the numbers that we would — if we were to rely 100 percent upon the southern sections, we would have fallen drastically short of or shy of the mark.

A lot of that comes in that there are not a whole lot of registered volunteers in the southern section, and likewise, you know, we have our shortages here also, but we're in better shape.

So, I think that concludes my summary and my recommendations.

CHAIRMAN CLUFF: Fine. Thank you. Questions, Bill?

COMMISSIONER IWAN: A comment and a question.

I think I can speak for the Commission and say that we on the Commission feel this is an extremely important program that SEAONC conducts, and want it to be as successful as it possibly can. And I take it from your testimony, and also my own observations, that things didn't work too well in this particular earthquake. There were — you pointed out a lot of areas where there were problems.

And I think the Commission would like to help in rectifying some of those problems. It would be very helpful for us if you people prepared documentation — and we appreciate your testimony, but I would encourage you to prepare a report or some kind of documentation to say the things you said, and maybe even more, and to give us that as a basis by which we can help you in taking action with various organizations and agencies, to see that some of these things don't happen the next time.

MR. ROTHFUSS: Okay.

COMMISSIONER IWAN: Thank you for your testimony.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: I was just curious. Had training taken place with these engineers ahead of time, or was it on-the-job training when provided with the documents?

MR. ROTHFUSS: The engineers who were pre-enrolled in the OES plan go through — are requested to go through a biannual training session. There was one in '87, at the Richmond Field Station at University of California. We had approximately 150 engineers go through a damage assessment workshop, where we had the morning devoted to a lecture and the afternoon devoted to hands-on inspections, where we damaged — quote, "damaged" structures around the field station with butcher paper and paint, and said, you know, "Go out and inspect these structures."

And the results of that worked out that — it looked like a shotgun blast, for the statistical picture — there were — for a given structure, we had people post it as green, yellow, and red. And that lent support to the ATC 20 project for a more definitive criteria.

COMMISSIONER SNYDER: Was the training provided by OES?

MR. ROTHFUSS: No, it was not.

CHAIRMAN CLUFF: LeRoy?

COMMISSIONER CRANDALL: Blake, my regional pride requires me to confirm what I think you said, that the southern area is under-registered, in terms of volunteers —

MR. ROTHFUSS: That's my understanding.

COMMISSIONER CRANDALL: — compared to the north?

MR. ROTHFUSS: In Northern California, we have 180 registered volunteers. And my guess — the numbers I was told earlier this year was that there was approximately 50 registered volunteers for the Southern California section.

COMMISSIONER CRANDALL: That's got to be wrong. I know many of them that felt they couldn't come up north to do it for a week.

MR. ROTHFUSS: Right. Well, I understand the difficulties once you are requested to come up, you know.

COMMISSIONER CRANDALL: Yeah.

MR. ROTHFUSS: In fact, in Northern California we had a lot of people who were just busy with family problems and client obligations.

COMMISSIONER CRANDALL: Well, when Ted Christianson got the word down south — now, it's my understanding he was heading up the coordination down there — they had these people down at the National Guard Airport, wherever it was, Orange County or somewhere, within two or three hours.

MR. ROTHFUSS: Right. I'm talking about pre-registered, people who were —

COMMISSIONER CRANDALL: Yeah, right. Okay. Well, I'm going to have to take a look at that.

MR. ROTHFUSS: — with the ID cards.

Once the emergency was noted or made aware to everybody, I don't think you could have turned the volunteers away, there were so many of them. And I think Ted had that same experience, where people wanted to come up here and weren't really sure how to — how to volunteer their services.

COMMISSIONER CRANDALL: Yeah. But you think there are substantially fewer in Southern California than there are in the north, right?

MR. ROTHFUSS: That's my understanding.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: Pardon me.

I do want the Commission to hear one remark that I need to make about our speaker, because this is somewhat human with regard to what happened, and he didn't mention it.

He didn't tell you that Tuesday night — I just learned this last night, by the way — but Tuesday night, his wife went into false labor — that was the night of the earthquake. She conveniently postponed the birth of the child and let him go down to the emergency center and work hard. When he was finally relieved of that duty, then she decided it was time to have the child. And there was a rumor, however, that the child was going to be named Loma Prieta.

(Laughter)

COMMISSIONER FRATESSA: But the real question, I think, in the Commission's mind, there may be a need for you to distinguish something, and there's — the word was thrown around — "volunteers." In an earthquake, there are volunteers coming from everywhere. But what we — I'd like you to distinguish is — we'll call them the card-carrying, pretrained volunteer that carries an OES damage assessment card. I don't know if you have yours in your pocket, but I have mine. And I think — would you distinguish what the difference is?

And the problem that I'm concerned with is one of liability, in that a person who rushes in may be a licensed structural engineer, and competent to do many of those things, but he doesn't have the card-carrying OES — and I don't know that he's covered.

MR. ROTHFUSS: Okay. Thanks for bringing up that distinction.

There is a pre-enrolled, preregistered volunteer program. Say — take myself, for example — I went to the OES, or they came to one of our meetings, we signed up, filled out an application, which talks about your credentials, who you are, where you were born, your mother's maiden name, and all sorts of information, but most importantly, your credentials, professional credentials.

And you have to sign an oath of allegiance to the Constitution of the United States and the Constitution of the State of California. And that's witnessed by a director of the Office of Emergency Services. He or she signs their name at the bottom of it. And then, at that point, you are an official, registered volunteer.

That form goes into a data base, and then they issue a photo ID card, with your name and pertinent information on it. And it's basically a State of California employee's card. It says you work for the Office of Emergency Services and that you are — your primary function is for damage assessment.

Those are what I referred to as the preregistered volunteers, and those are the people we put through training programs, the people we send publications to on changes of policies, people we invited to the ATC 20 training. They are different from the volunteers who showed up Wednesday morning saying, "Here's my professional engineer's certificate. I will help. I will volunteer to do damage assessments."

As far as the State of California is concerned, until they sign that application, swearing an oath to the United States and the State of California, they are not state-registered volunteers. They might be San Francisco-registered volunteers, but not state-registered. And the distinction, again, comes into the liability and workmen's compensation protection, that unless — you know, the state plan covers that for their volunteer, but not the city and county plans, unless they've got some umbrella policy that they've set up on their own.

I know that for Days One and Two, a number of volunteers that I talked to, they showed up, say, at the Marina Middle School, and they were rushed out into the streets and doing damage assessments, and they never had to sign anything, they never had — didn't even have to put their name down. They just showed their professional engineer's registration card, and that was it.

So, Commissioner Fratessa, does that answer your question?

COMMISSIONER FRATESSA: Yes.

CHAIRMAN CLUFF: Stan, you had a question?

COMMISSIONER SCOTT: Just a quick query.

You made an intriguing comment about possibly Region 1 not being in full support of the ATC methodology, or something along that line. Is there some way we could find out more about the — what lay behind that, particularly if it might represent any kind of recurrent or continuing problem?

MR. ROTHFUSS: I can't answer that question directly, because all I heard was the scuttlebutt. However, I would recommend talking to Jim Alexander of Region 1 and finding out exactly what his stand is on the ATC 20 project.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: If I could just follow up on that question, isn't the ATC 20 a relatively new document, and maybe some of the agencies haven't had a chance to look it over and accept that, if you will? I'm wondering if that might be part of the problem.

MR. ROTHFUSS: Yes and no. The ATC 20 project is brand new. They had their first seminar a month ago. And so, that was the first time anybody was able to take a look at the publication and the criteria and the extensive research that the ATC contractor did.

To answer the second part of your question, I believe that since the OES was the primary sponsor of that publication, Rich Eisner, who's the head of the BAREPP plan
— and I do not know the name of the gentleman who has the SKEP plan down in Southern California —

COMMISSIONER CRANDALL: Paul Flores.

MR. ROTHFUSS: Paul, yeah. Thank you.

And my understanding is that they primarily were the interface on that project.

When I talked to my OES contact about the ATC 20 workshop, he didn't even know about it. That's in Region 1, which is 20 miles away from the BAREPP headquarters, and he was unfamiliar that there was even a project being funded.

And so, I agree that they probably are not familiar with it, but since they paid for it, it seems to me they should know what's going on.

COMMISSIONER EBERLE: Good point.

CHAIRMAN CLUFF: Thank you very much, Blake.

We need to move on.

MR. ROTHFUSS: Thank you.

CHAIRMAN CLUFF: Is there a representative from the Oakland Building — no, not here, okay — or the KTVU —all right.

We'd like to take this opportunity to acknowledge Bill Stalen, is it? — Bill, with OSHPAD, Office of Statewide Health Planning and Development. This morning there were some questions and comments about hospitals, and Bill is prepared to talk with us for a few moments about seismic safety and the performance in Alameda County.

MR. STALEN: Thank you for giving me a couple of minutes. I can either talk about just Alameda County, or I can do all nine counties. I have damage assessments for all counties with me.

CHAIRMAN CLUFF: Well, why don't we try to focus on Alameda County? You can, in general, comment on the whole thing, but let's try to keep the focus on Alameda.

MR. STALEN: All right.

Basically, the hospitals performed as we predicted. The older hospitals had more trouble. The pre-Hospital Seismic Safety Act hospitals were — performed extremely poorly, a lot of unreinforced masonry, really weak nonductile concrete frames with infill. Possible seismic safety anchorages literally blew up, in some instances.

All the hospitals in Alameda County, because the ground-shaking was relatively slight, you know, as we — as you indicated at the beginning of the session, 6 or — you know, 6 to 12 percent g — the hospitals performed fairly well, with one exception. That hospital was red-tagged by our office, with a reinspection by OSA when the facility wanted to try to reopen an adjacent structure. And we said that the danger of collapse due to a significant aftershock was too great. So, we kept them out of there.

Like I say, Alameda County performed really well. We have some problems that we're going to be dealing with in another hearing such as this that Bill Holmes, who's the chairman of the Building Safety Board, is going to hold in January sometime, as I try to collate this data to become a little bit more usable.

Dealing with, you know, the usual problems that we've got, with power and the elevators, my guess is that in all nine counties, we probably lost 90 percent of the elevators in the facilities. Either just the motion sensors were triggered and the elevators shut themselves down, counterweights came out of the — out of the guiderails, or the guiderails were actually bent to the point where the elevator would not function. Supposedly, all the elevators in hospitals were retrofitted. We don't know what they did, other than collected a pretty good sum of money and then walked away.

We lost a couple of liquid oxygen tanks that were under designed pre-Seismic Safety Act tanks that were put in. The manufacturers are attempting to upgrade the tank systems, with the hospitals in some cases fighting tooth and nail because they don't want to spend the money.

Like I say, Alameda was relatively undamaged. So, if any of the commissioners have any questions, I'd be more than willing to attempt to field them.

CHAIRMAN CLUFF: Let me ask, for the whole area and hospitals, what percentage of the hospitals came under the Seismic Safety Act? And could you kind of go into that a little bit more, in terms of — the ones that came under the Act, as I understood you to say, performed without any damage?

MR. STALEN: My guess would probably — I don't have any statistics on it right in front of me. My guess is probably less than 25 percent of the hospitals in all of the affected counties are under the Act. They're relatively old facilities that, you know, just continue to be open.

CHAIRMAN CLUFF: Could you explain why those don't come under the Act?

MR. STALEN: Well, the Act was instituted in 1983, I think. OSA started reviewing — we came into existence in '83 — OSA started reviewing in '73, after the San Fernando earthquake. Any work that has taken place in any hospital subsequent to '73 has been reviewed, so any remodel of — I mean, just short of, you know, repainting the walls, has come in through — for a building permit. So, we've been trying to upgrade the systems on the hospitals, if not the primary structure, when we've been able to.

Some of the hospitals have been going through voluntary upgrades where they've been strengthening their structures and hardening them to the current code levels. But, again, that's — you know, most of the hospitals are founded on rock. The intensity of the shaking, except in the Watsonville-Santa Cruz area, was not very significant.

One of the hospitals down in Watsonville appears to have moved about 6 inches, foundation and everything, heaved the ground, and then moved back into position. So, on the south tending walls all around the facility, there's a huge ground rupture.

The gardener will have fun with that.

CHAIRMAN CLUFF: Given the performance in Alameda County that you observed or collected, and the scenario that we're most concerned about is the realistic occurrence of, say, a magnitude 7 earthquake on the Hayward Fault, what is your judgment about the performance of the existing inventory of hospitals in Alameda County?

MR. STALEN: Not good. I think that Alameda's probably got some of the older hospitals, along with the downtown area of San Francisco. Some of the — some of the facilities have been hardened, but nothing significant. We've got very old hospitals that — Alta Bates, Peralta, Eden, you know, are extremely old facilities. Peralta — some of the buildings at Peralta date back into the turn of the century.

CHAIRMAN CLUFF: So, what percentage of the total hospital inventory would perform poorly, would you say?

MR. STALEN: I'm not sure. Again, I'd have to go back and look and see what the age on the facilities is, from our records.

CHAIRMAN CLUFF: But is it more than 50 percent?

MR. STALEN: Yeah. I think it would be more than — more than 50 percent.

CHAIRMAN CLUFF: As much as 80 percent?

MR. STALEN: Possibly.

CHAIRMAN CLUFF: Somewhere in that range.

MR. STALEN: Um-hmm.

CHAIRMAN CLUFF: Further questions, commissioners?

VICE-CHAIR RIORDAN: I would just — excuse me —

CHAIRMAN CLUFF: Yes, go ahead.

VICE-CHAIR RIORDAN: — Mr. Chairman.

I'd like to ask — we heard earlier from the Highland Hospital, and this apparently is the county facility. Is this one of the newer facilities? I think I've forgotten — if he mentioned it — I wasn't sure how old that facility was.

MR. STALEN: I don't have an age on it. I'm not sure. It looked — from the pictures that I saw when they were showing it in the — in the — you know, in the news accounts, it looked like it was probably a facility that was built in the late '50's or '60's. So, that would be considered a — what we would call a nonconforming structure. On a check by Local Jurisdiction 2, they probably have 6 percent g lateral load, with none of the additional detailing requirements.

VICE-CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: Since you've made those statements about the percentage of them which would not perform well, I guess immediately the question is not — you know, "What is the problem?," "Why not?," and "What do we have to do about it?," because I would think 80 percent of the hospitals performing poorly would be unacceptable.

So, what — where do we go? And what is the source? And when I say the "source," are we talking about unreinforced masonry buildings, or pre-1950 types, or how do you rate these types of buildings? And are we looking at that 80 percent as being out of commission or potential collapses?

Well, that's a short question it won't take you long to answer!

MR. STALEN: Again, I'm not sure exactly how far it would go out.

The Commission has the blind survey that I have not seen, on all of the facilities and the grading of the facilities. Looking at that, I think we could probably lay out a better percentage of the facilities that would either just be nonfunctional or limited functioning or potential collapse mechanisms.

Like I say, I haven't seen it, so I can't address, you know, the extent of damage that a facility would undergo. Probably a greater problem than just a facility —losing — you know, losing a facility, is the other problem that we're — that I will be dealing with with the Building Safety Board, is the utilities. Some places we got very good response, other places we got no response, in terms of supplemental diesel fuel and potable water.

And that's something that we need to deal with, from the Building Safety Board standpoint, which I'm sure we would need your backing, because that's going to be a very politically sensitive issue, if we're going to force somebody to come up with backup water or, you know, if it's — if it's going to be a requirement.

CHAIRMAN CLUFF: So, Bill, further on Paul's question, are you developing a plan to clearly state what we learned out of this and what program you're going to implement to overcome this unacceptable level of risk that seems to be in Alameda County?

MR. STALEN: We will to some degree. I'm not sure where — you know, exactly the direction we'll be taking. Part of that will come out of the hearing that the Building Safety Board will have, and then also, a seminar that was, coincidentally, scheduled for the Thursday after the earthquake, down in San Diego, with all the — with a large portion of administrators attending, that we cancelled so that we could provide better response to the disaster.

Like I say, a lot of it's going to be really highly political, I think, and it's — you know, it's going to have to be walked on very gingerly, in terms of what we try to do.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Do you happen to know any of the instrumentations that were on any of the hospitals, at this point, and what kind of readings that they had produced?

MR. STALEN: Out of the Strong Motion bulletins that I saw, the only hospital that's instrumented, I think, is Kaiser, South San Francisco. And it had some readings of about two-thirds g, I think, at the fourth floor.

COMMISSIONER UMEMOTO: I remember the Building Safety Board was — per Senator Morgan's bill, had established to set aside funding for instrumentation. Are there current plans to instrument many of the hospitals in the East Bay area at all, at this time?

MR. STALEN: I'm not sure what the status of that is. It was just, I think, about four or five months ago when the board met and was going to start to establish the committee to look into which facilities should be instrumented, and try to figure out how the instrumentation would be distributed in the — you know, in the high seismic risk areas.

CHAIRMAN CLUFF: Paul, you had an additional question?

COMMISSIONER FRATESSA: More or less, just to finish, if there's something this Commission can do to help you implement the plan we'd like to have you come up with, would you let us know, because I would like the Commission to do what it can to help you?

MR. STALEN: Um-hmm.

COMMISSIONER FRATESSA: But I would like to hear back what the plan is.

MR. STALEN: Yeah. Like I say, we're going to have to sit down with the board and everything else and — you know, I've worked on a couple of other things previous, so, you know, it's going to take a joint effort.

CHAIRMAN CLUFF: I'd like to move on. We have Robert Cratty and April Treece from AT&T.

If you could summarize briefly to the Commission what you learned out of this earthquake, in terms of what works, what doesn't, and how we might work together to improve —

MR. CRATTY: All right.

CHAIRMAN CLUFF: — to be better prepared for the next one.

MR. CRATTY: All right. First of all, again, I'm the network operations manager. I maintain the central office equipment for Oakland and San Francisco.

April Treece is the Public Affairs manager, and she has some information that goes along with this.

I have three complexes in the Bay Area: Oakland, on Franklin Street; and in San Francisco on Folsom Street —both have large electronic switching machines for our switched message network, or the DDD network — both, along with another building in San Francisco on Pine Street, are centers for private line service to thousands of customers. And at Pine Street in San Francisco, we also have a center for overseas private line circuits. All three have terminating facility systems for optical fiber digital coaxial radio-type systems for all of our services. And the Oakland building is a major facility hub for facilities that go all over the place.

All three buildings are condominium style. Pacific Telephone being the major tenant, is the building owner, and is responsible for supplying emergency power and all of the building functions.

I'm going to address the equipment damage we had and what happened to our major services.

As far as equipment damage, all I had — I had a rolling ladder fall into a frame, a time slot interchange frame, which has considerably redundancy. And there was no impairment at all, and that was repaired within two hours.

We have a coaxial cable that goes across the bay near the Bay Bridge. On Wednesday morning we inspected the manhole. We were a little concerned about sloughing off of the seawall. We had no service problems, but we rerouting all of that service until we could inspect it further. And then, the barge that was working on the bridge, when that turned and dropped its anchor, it mashed my cable, so — but we had all the service rerouted.

We have essentially the same services in San Jose, and we had no problems, no equipment problems in San Jose.

In Oakland we had some mini-computer centers, two floors of that, with several mini-computers. These provide internal operational support systems in California. We lost a couple of those due to the bouncing. Those provide remote testing features for our message trunks for some Southern California machines. And in that case, we just instructed those places to call people out, down to the office, and maintain their office. And that was restored in about six hours.

We have AT&T Network Systems — it was our manufacturing arm — has an emergency delivery and restoration plan already in effect, where we can have major pieces of equipment on the road to a certain site within 48 hours after a decision to do that. We exercised that plan to its fullest. We had some questions on the structural integrity of the building in Oakland on Franklin Street, so we had equipment needed to completely replicate it. Everything that I have in the Oakland building was on a truck somewhere, heading this way.

And at one point, I was involved in where are we going to park all the trucks, but we never needed the trucks, because the — we didn't have the structural problems in the Franklin Street building.

As far as our services, we had — the people that manage our network — it's kind of a gut feeling that in a disaster like this, one call out of the network or out of the disaster area saves probably about ten calls back into it. You can ask people to call other relatives, call friends, and if they can't get back into the area, they start calling other people that may have gotten into the area. But that's the general rule of thumb we go on: one call out will save us ten attempts trying to get back in.

Our network is designed to handle a busy day, busy hour, for a normal business day. We have many controls that we need to put in the network when we have heavy calling to a specific area, especially if most of them are non-business-related.

Control — we started — our national operation in Bedminster, New Jersey, started inputting controls within ten minutes after the earthquake. Our people in Oakland, at our regional network center, who were in the Franklin Street building, picked their books up off the floor and went out and located with the Pacific Telephone center out in San Ramon that does essentially the same thing for Pacific's network.

The controls that were put in nationally we call call-gap. We call-gapped calls to the 408, the 415, and the 707 area code. Now, basically, what that means is that our machines, our switching machines around the country, by way of software, we instructed them that all calls out from Oakland, San Francisco, and San Jose switches, once people got to our machines through Pacific Bell, all those calls heading out would complete. Inbound calls would be accepted for this area to these switches only if trunks were available. And this is — if trunks were not available, calls were routed to an announcement.

Call-gapping is a dynamic control, and it varies percentagewise all over the — all over the board. There are times when all calls, both in and out, were being completed, if the level of outbound calls from this area were at such a level. There were many times during — that we would take all inbound calls, so we weren't blocking any.

About 6:00 p.m. Tuesday, Pacific Telephone asked us to establish what we call cancel-to's to various Bay Area prefixes to help alleviate the congestion they had in their area. So, that's — on my machines in the Bay Area, when I got a call from outside the Bay Area destined for one of these prefixes, I would cancel that call and send it to a recording right there. And again, that's not 100 percent of the traffic, and we can sit there and we vary that by percentage of calls that we have destined for these prefixes, depending on what Pac Bell was asking us to do.

Operator services nationwide was given specific instructions on how to limit calls to the area.

On 10/19 — on the 19th, all call-gapping and all of the cancel-to's were removed, and we put in another control called selective trunk reserve that was put on all our two-way trunk grounps. Basically, what this is, trunk groups — a group of trunks has 28 circuits — we reserve 20 of those for calls out of the Bay Area and 8 for calls into the Bay Area.

And then, on the 24th, we removed all controls.

We have a lot of customers with 800 service in the Bay Area. They were all contacted by headquarters people, offered — we offered to reroute their service to other centers around the country. In other words, we have some large companies that have other centers, and we could just funnel a certain percentage of those calls. We could split them up any way they wanted to split them up. We could route their 800 service anywhere they wanted it routed to.

We had over 100 companies take us up on that, and then we had several more that we just inserted a customized announcement for calls coming to their 800 number, when they had people out here.

We have, in the Oakland Franklin Street building, TTD operator service, service for the deaf who try to reach operators. That ran through Tuesday night, and early Tuesday (sic) morning we rerouted those calls to a similar center in Washington, D.C. We also have remote — or programmable conference arrangements, where we set up all conference calls for the western United States.

Again, with questions about the structural damage in the building, we tossed all the operators out of the building, and we split that call-up to three other centers around the country. Minneapolis took a third, and Hungtington, New York, a third, and Atlanta took a third.

All other operator services in the Bay Area, we had established an announcement that said, "Due to conditions, we are able to complete only urgent calls. If your call is urgent, please stay on the line. An operator will answer."

Tuesday, from 5:00 p.m. to midnight, we had some 38,000 calls that were abandoned due to that announcement. Those that did stay on for a delay that was up to 84 seconds stayed on, and we processed 70,000 of those calls.

Wednesday that decreased some, and by the end of Thursday, operator service was back to normal, and Friday was a normal day for operator services.

And April has — for our message network, has some later data than I did on the number of calls that we did process, nationwide and locally, for our switch network.

MS. TREECE: Yes. We experienced more than double the calling volumes over the normal 24-hour period, from Tuesday at 5:00 p.m. to Wednesday at 5:00 p.m. We completed over 123 million calls on the long distance network, which was 85 percent of the attempts that were made on the network. The attempts were 144.7 million. Normal for that same 24-hour period is 85 million calls.

In the local area, as Bob indicated, we put heavy controls on our network. Incoming attempts were nine times the normal for that particular period. We had 27 million calls trying to get into the area. We completed 9.5 million of those calls. The normal for that same period is 3.5 million calls. Outgoing from the area, we had 6.7 million calls attempted, and we completed 5 million of those calls. 75 percent of all calls that were attempted in the Bay Area going out were completed.

The day following, on the 19th, the Thursday after the quake, things became a little more normal, although they were still 353 percent greater than a normal Thursday. We still had controls on the network, but they were much lighter.

Completions going out of the area were at 89 percent, and 60 percent of the calls attempted were completed.

From a community response point of view, you also may be interested in knowing that within 24 hours after the earthquake, AT&T had established a calling center for residents in San Francisco's Marina District, that area, of course, being the hardest hit in the immediate Bay Area. Close to 1,500 free calls were placed out of the AT&T emergency trailer, which operated 24 hours a day, through Friday following the earthquake. We then, at that point, cut our hours back to 6:00 a.m. to 8:00 p.m. to take care of the waning number of residents in that area who were interested in making calls.

By Monday following the quake, we — Monday was the last day that we operated that center — there were very few people that, at that point, needed to make calls out of the area.

People using the service that we provided there could place calls to any destination, whether it be local or out of the state, domestic or international. That effort, coupled with AT&T's immediate response to the needs of the American Red Cross and the Salvation Army, through substantial corporate contributions of money and office space, and employee donations of time and money through our Telephone Pioneers of America organization, and as individuals, quickly summarizes our immediate community response on the October 17th earthquake.

CHAIRMAN CLUFF: Are there questions, comments?

Yes, Bill?

COMMISSION IWAN: Yes, I have a question.

Of course, at the present time, now we have competition in long distance service, and there's different groups doing that. And I'm just curious. To what extent is there any form of cooperation or coordination between the various companies that handle long distance communications, so that if one company's system was temporarily down or knocked out, that calls could — some arrangement could be made to transfer calls to another system?

What I'm thinking, for example, is, if a particular agency had a particular carrier for its long distance service, and that particular carrier was knocked out, to what extent could there be some kind of, in an emergency, cooperation or sharing of that, or is this something that's already been worked out? I don't know.

MR. CRATTY: I really don't know, to tell you the truth. I personally don't know of a plan to do that.

COMMISSIONER IWAN: Um-hmm, because I could imagine, in a much larger disaster than this, that there might be some failure of the major networks —

MR. CRATTY: Well —

COMMISSIONER IWAN: — maybe not yours, but some.

MR. CRATTY: The common place to do something like that would be at Pacific Telephone's equipment, because —

COMMISSIONER IWAN: At the access point somehow, um-hmm.

MR. CRATTY: At the access point, right. They have — they have the ability to switch calls to either direction.

COMMISSIONER IWAN: It might be — it sounds like it might be worth at least looking at that as a possibility in a disaster.

CHAIRMAN CLUFF: Further questions? Keith.

COMMISSIONER UMEMOTO: Does that mean you have an agreement with Pac Tel, say, for instance, if they're an AT&T subscriber and then you're overloaded, that they would divert it to MCI or US Sprint?

COMMISSIONER IWAN: No, they don't. I guess they don't.

MR. CRATTY: I don't know if there is an agreement, although I do know that that has, in fact, been done.

CHAIRMAN CLUFF: Further questions, Randy?

COMMISSIONER PESTOR: Yeah. On public telephones, does Pac Bell usually provide the public telephones, or AT&T provides some of them too, right?

MR. CRATTY: Well, the actual phone set itself, the phone itself, can be provided by anybody, Pac Tel, AT&T, or several other outside vendors. The line from that phone has to go to a Pacific Telephone switching office.

COMMISSIONER PESTOR: Because it seems over the years that it's becoming more and more difficult to find a public telephone. And I don't know whether —

(Laughter)

COMMISSIONER PESTOR: Is that true? Or am I the lone ranger on this line?

(Laughter)

MR. CRATTY: You can now buy your own pay phone, if you'd like.

COMMISSIONER PESTOR: Yeah, I know. I —

(Laughter)

COMMISSIONER PESTOR: Somebody here from Cellular One was — you know, he had his — right, right.

I was just wondering if there is any coordination on that, as far as, you know, public telephones, to make sure that there's enough public telephones in some of these locations. Anybody on top of that?

MR. CRATTY: I really don't know. And again, I think that would — that would probably — as far as where the location is, that would be something that Pacific Telephone would be involved in.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Yes. I just wanted to confirm something I believe I heard you say.

In community education, we tell the public that they will probably be able to make phone calls out of the area, but not receive them in. And I hear you validating that statement, that I think you said 75 percent of the calls out of the area were able to be accomplished, where the incoming calls were not. So, we're actually — I just wanted to validate that we are telling people the right message, to pick out someone in another — out of state to call to say that you're all right, that that is still a good plan.

Also, I would like to publicly thank AT&T, Pac Bell, GTE, and others for their response to the American Red Cross and other agencies in providing us with immediate communications, and also communications for the public. I've been in many of our shelters where the phones have been provided, and it was free of charge. They could call anywhere in the world — lord knows where they were calling — but it was a wonderful service, and it was most gratefully appreciated by all of the agencies, and I wanted to thank you for that.

MR. CRATTY: Thank you.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much.

MR. CRATTY: Thank you.

CHAIRMAN CLUFF: I believe we have the KTVU Channel 2 people here. And if Al Corral and Jay Martinez come up — no?

MR. WATSON: No, that's not us.

CHAIRMAN CLUFF: No? Sorry.

Mark Richardson and George Watson. Sorry.

Having not been here earlier, let me just explain to you what we're about here, trying to look at what we can learn from this earthquake. The Commission has been involved since its formation in '76 with seismic safety issues, and we want to find out what worked, what didn't work, what we can do to improve it.

And certainly, the news media played a very key role — the local news media — let me distinguish between those in giving you my judgments about this. But I think the local radio and television did a wonderful job. The national television, I think, we might look at in another way, and they were more disruptive than helpful.

And so, we'd like to work with you to see if we can't manage this a little bit better, so that the disruptive nature of some of the hot news items that seem to have a higher priority than maybe some of the more important safety aspects, we can manage that a little bit better when we have the more disruptive earthquake that we certainly feel is going to strike the Bay Area.

So, if you'd take a few moments to give us your views on what worked for you people, and how we can help you, then we'll have some questions.

MR. WATSON: I might go first, because I think Mark will have more substantial input, because he was working the assignment desk. I was in the field when it hit. I was at Candlestick Park doing a pregame story, and I was in sort of a dead zone. We just — it was like a blackout of information. It was all rumors.

The rumors we were hearing were that 880 had collapsed, the Bay Bridge had collapsed, and there were 30 or 40 reporters and cameramen standing around going, "Come on!" I mean, there was just — it was just a very unreal situation. And we were in the situation of being news-gatherers and not being able to gather any information.

My input from this point, it was an attitudinal thing. It was us against them, the media versus the authorities. If you — if you stopped a cop on Market Street, it was fine. He didn't know anything. I mean, you knew as much as he did. But when you were calling the authorities, it was — it was like, when we should have been working together, there was a feeling that we were working at odds.

And as you said, as time went on, I think the media finally got a chance to show itself in a most positive light, and we were a very valuable tool for the public. Any information we got, we put it on the air, and we became valuable.

Radio did a wonderful job. That's — in the early hours, that's where we were getting all of our input.

So, my question was strictly — it's got to be an attitudinal thing that we're on the same side. And that was pretty much my input.

The first 24 hours, we were just all in a daze. But Mark was on the desk and had a more hands-on thing, and I think he can probably give you more valuable information.

MR. RICHARDSON: Well, actually, I wasn't on the desk when the quake hit. I was on BART on my way to the game, and I got thrown into action. I was off. I became a field producer. I hooked up with a cameraman, and we went throughout the city, San Francisco, shooting all the disaster spots there.

As George said, I found the emergency folks on the scene very helpful, when they could be. Of course, they had many things to do, like at the Marina fire, but there was one instance where there was a fireman telling the crowd looking at the fire, going on, "Go home. It's going to get dark. You're not going to have any lights. You need to go home. Don't use candles. Get flashlights. Do whatever you can. But go home. Get off the streets. You don't know. This is going to be really dark out here." And he was very helpful.

And when you could grab somebody, you could get some information from them.

As far as finding out what was going on, we were in the same void. When the quake hit, our station was thrown out of power also, and there was no communication phonewise with the assignment desk, but we did have two-way communication, via two-way radio. And most of the folks in the station had gone out in the parking lot, so when it first hit, we couldn't talk to anyone.

So, the media out in the field was just basically going on what they saw. And we were giving information back to our assignment desk on what we saw. And from what I heard from the assignment editors on the scene, they didn't have any information from officials. They couldn't get through to lines at the police department, the fire department, or any of that, so they were relying on us for what we saw and was able to give back to them.

And finally, when the phone lines were back up, they were getting calls in from other citizens who had seen this, or officials who had seen that. You know, people were at home, not working at an official capacity, but basically telling us what we saw, and we were just putting, like George said, any information out that we could.

My input on the assignment desk came — I got back into the station probably at three o'clock in the morning. And from then on, I started working the desk until six o'clock the next day.

We still weren't getting much information from official agencies. It was like, "We are — we are stacked, we are tied up, we've got the phones coming in, but I can tell you this little bit, or that little bit, but not anything major." Basically, what we had to do was assign the crews to where we thought most of the damage was, and just get them out to the hot spots and find out on the streets what was going on.

CHAIRMAN CLUFF: Another observation having to do with, well, I guess the national networks, but I think the general world was led to believe that the entire Bay Area was flattened. That was unfortunate, and it was called the Great San Francisco Earthquake; in fact, it is not. San Francisco, except locally, came through pretty well.

Is there some way that you people, in looking back at this earthquake, where we can try to give factual, accurate information, rather than dwelling on the same building collapse? And it wasn't until — it wasn't until the resumption of the World Series did I ever see a televised shot of San Francisco and Oakland intact that was broadcast to the world. It seemed it took about a week before that happened.

MR. WATSON: I have friends and some family back east, and what they — the media exposure they were getting were tight shots of the Marina fire. And if you took that shot out of context, it looked like the city was burning to the ground. And they thought we were all day. And these are smart, sophisticated people in Washington, D.C. They thought the city had gone under.

It's bad editing. That's all I can say. And it was bad journalism, because — I mean, you take some of those aerial shots of the city, you would think nothing at all had happened. Granted, we got hit hard, and it hurt, and it's — you know, people died. But it wasn't as bad as the media made it out to be on the national level.

I think, locally, I think we're pretty responsible.

CHAIRMAN CLUFF: Questions?

MR. WATSON: But we have no control over what the national media does. CBS was working out of our facilities. And what we put on the air and what they put together, sometimes I thought they were working on different stories.

(Laughter)

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: I think, as the rest of the Commission knows — there we go — I was an unwilling spectator to the whole thing over in the Marina, where I live. I got to watch everything from a box seat.

I observed there were two different roles played by radio and television — and I'm going to ask you to comment on this in a minute — for very practical reasons. The power was out, and if you have a portable TV set that's battery-operated, the batteries are good for about an hour. If you have a portable radio, the batteries are good for probably several days, if you're careful.

And the mission of the two medias was totally different. I didn't see television, and I was right in the middle of it, so that was academic. But I wonder if, in looking forward to — this is going to happen again — my seismologist friends convinced me of that — we don't need to recognize that there is a different mission at that particular time.

One is a public health and safety mission, a need for immediate responses to what's closed and where, and don't go here, and all that kind of thing. Radio probably, if for no other reason than that the batteries last longer, is perhaps better for that. And then, obviously, TV has a separate role to play. It's reporting to the outside world who's still got their power on.

Would you care to comment on that?

MR. WATSON: My own feeling was — I can just go from my own personal experience — being in the field, we were getting all our information from the radio. That's where we were getting our information. Television, just the quirks of the business — it took us a while to get our act together.

At Channel 2, I think we were off the air for about, what? — an hour and a half? Yeah. We were off for a long time.

So, it took us a while. Once — I was very pleased with Channel 2 because they threw programming off the air, and we were available 24 hours a day to go on the air, if we could. So, I think we provided a service that way.

It's a different sense. I think radio's always going to do a better job in a situation like that. You've got a guy with a tape recorder out there, and he can walk around, as opposed to all the electronic toys that TV has — and they're useless when you don't have power. So, I do think, just by the nature of the beast, radio does a better job in the early stages of a disaster. There's no doubt about it.

CHAIRMAN CLUFF: Bruce?

COMMISSIONER BOLT: Well, I think you can be pleased for the response of the local media, both radio and television.

Circumstances beyond my control in this earthquake, I was at home, and I was monitoring continually KCBS and the TV to find out what was going on, all evening, through late into the night. So, that was the way I was getting information too. The cable system went out, to our house. Power did not go off in Berkeley, as you know. Your channel was out for a while, an hour and a half.

But Dave McElhatton was on — that's Channel 5, isn't it? — I think — very quickly. And he and his co- — what the heck — anchor, and then successively, as you folks came on and others came on, and I thought he did a superb job in terms of reporting factually what was happening in this earthquake.

They said, for example, "If you go to the telephone directory, you'll find that there are some pages in there" — and they held it up for people — simple things which kept people, I think, in touch with reality in these situations. There wasn't any really dramatic, trying to over-dramatize the situation.

But one of the great advantages that the TV had was, of course, the helicopters that were monitoring the traffic. And so — and, of course, you folks were at the stadium, and so we were getting word from there, although at the beginning, that was, as you know — my son was walking there at that time, and he didn't even know there was an earthquake that occurred, because he wasn't in his seat. So, that was not quite, for a while, part of the picture.

But the helicopters, the availability — I don't think you have a traffic helicopter, do you?

MR. RICHARDSON: We were able to get a helicopter up.

COMMISSIONER BOLT: You were, after a while?

MR. WATSON: We don't have one. We had to charter one.

COMMISSIONER BOLT: You chartered one. But that continuous presentation, abandoning the ordinary — as you say, the ordinary schedule, and carrying on through the evening, I thought, was very important for the citizens of the Bay Area, to really let them get a feel that this is not the end of the world, that they could just take it easy, just sit home and take it easy.

MR. WATSON: Well, what happens in a situation like that, all the rules are thrown out the window from our end of it, because normally you have sources, and you interview people, and you get the information from the other people. In this case, Mark was in the field, I was in the field — it's strictly on your own observations.

Hundreds of thousands of people are in their homes, depending upon this information, and you're their representative. And you're out there, so rather than being a documenter of facts, you're saying, "This is what I saw." So, it becomes firsthand reporting, which is not the way it's normally done. So, we had to change our style as well.

CHAIRMAN CLUFF: Paul, you had a —

COMMISSIONER FRATESSA: Mark, I thought you were going to give us the classic of all items when you said you weren't at your desk, at the assignment desk. I thought you were going to tell us you were under it.

(Laughter)

COMMISSIONER FRATESSA: That would have been a good line.

We have heard constantly that communication is a problem in an earthquake, and you're telling us the same thing. My question to you is, do you have a list of people that you should be calling, of official sources, in the event of an earthquake, such as OES, the regional office, and is that a standard? That's number one.

And is that complete enough for you, and is there a suggestion you'd have to get you a better source of information, not so much for what you see, but for the official reports on whatever it might be?

MR. RICHARDSON: Yes, we do have. We have lists of all the OES offices. Sometimes they get mixed up in rolodexes or so forth, but we do have them.

What would help is if we could get a list from OES that tells us the numbers for all the offices, in all the counties and all the cities or whatever, wherever we have to call, because like I say, sometimes we get them by calling on our own, "What's this number?," "What's that number?," and they'd go down in a rolodex somewhere away from each other. But if we had them right someplace all together, where we could start looking, that would be real good.

MR. WATSON: Is there a name? I mean, like is there one person you can go to? I mean, I don't think such a thing exists, like that.

MR. RICHARDSON: No. No one name that we have.

COMMISSIONER FRATESSA: What I was suggesting is that you had an earthquake call list, which would take OES, and you might have a Red Cross contact number, or a series of people who would most likely be able to give you a status report and continue to fill you in on information like that.

MR. RICHARDSON: We didn't have that before this quake, but I think we're going to put one of those together now.

We have all those numbers. Like I said, we do have Red Cross numbers, we do have OES numbers, all the different agencies, Dr. Bolt — we'll definitely, after almost every major quake, we'll call up to UC Seismology and ask if we can get up there and take a look at the Richter and talk to those folks. That's what we do. We go for somebody who can tell us and help us tell the folks out there what's going on.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: We keep hearing over and over again the positive role that the media plays in getting information immediately following an earthquake. And I guess one reason for that is that there are a lot of trained observers out there. And I'm just curious, myself — at any given time, forgetting the World Series situation, there must be a large number of trained observers, reporters, in the field in a big metropolitan area like this. Do you have any idea how many reporters are there out there at any given time in a megalopolis like this that would be possible channels of information? Are we talking about tens of people, hundreds of people? Not just your station — I'm just thinking of —

MR. WATSON: We're —

MR. RICHARDSON: Our night shift is two crews.

MR. WATSON: The night shift, which is pretty low. So, that's pretty small. I can't speak for the other stations. I think they're larger than that, but not much.

MR. RICHARDSON: No.

COMMISSIONER IWAN: And I guess a follow-up question would be, is there any way to enhance that by — you know, we've heard — having a list of official people that you call to get information, but might there be sort of designated observers that — people that you might call for information, to enhance the size of that force —

MR. RICHARDSON: Well —

COMMISSIONER IWAN: — maybe geographically dispersed, or something like that.

MR. RICHARDSON: — that was a natural occurrence for, like you say, trained observers, people who work in news. I've heard stories of radio reporters that all of a sudden became TV reporters, because they were at a certain spot. It's just natural nature to call the station and say, "I'm here. I've got this. Can you get a camera? Let me tell you what I see."

COMMISSIONER IWAN: So, it happens automatically.

MR. RICHARDSON: Yeah. Yeah.

CHAIRMAN CLUFF: LeRoy?

COMMISSIONER CRANDALL: Did your station have its own emergency power, standby power, at that time? And if not, do you now?

MR. RICHARDSON: We did. We had an emergency generator that kicked up and — part of it did. There was one part of the generator that had a piece of something — I'm not sure what technically it was — but it didn't kick in. And so, we didn't have enough power to go on air. We had power, emergency power, to the two-ways, we had emergency power to some of the lights, but we didn't have emergency — enough power to go on the air.

But, it — from what I understand, it was just a piece that, had it been maintained, the system would have worked.

MR. WATSON: The engineers explained it to the News Department, and we never really did understand what happened.

COMMISSIONER CRANDALL: You were prepared; it just didn't work.

MR. RICHARDSON: We were prepared, but it was not maintained.

MR. WATSON: Something wasn't prepared.

MR. RICHARDSON: Maintenance is key.

MR. WATSON: No, there's a generator the size of a building, underneath the station, and it just didn't work.

EXECUTIVE DIRECTOR TOBIN: Keep it maintained.

CHAIRMAN CLUFF: Dan, you had a question?

COMMISSIONER EBERLE: I was just going to make an observation. What we're hearing is just how valuable the media is. And in many cases, being in emergency management, we rely upon the media to get the information. You were saying it's hard to get the information from the public officials. Many times, they don't know. And they get it from the media.

So, that's why it's so important to establish a level of trust and a level of knowledge before, and that list, and when you work the list. But I tell you, the media has got to be commended for their role that they work in emergencies. I think they're just invaluable.

MR. WATSON: Well, in this — thank you. In this era of tabloid news, that's nice to hear.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Thank you. I'm from Southern California, and I know we've been working diligently with the media down there to develop after-the-earthquake messages to broadcast to the public, "This is what you may expect, aftershocks," "This is what to do," "Turn off your gas." Has that been attempted or accomplished up here in the Bay Area at all?

MR. WATSON: Yeah. We did a lot of that, and I think what's happening in terms of probably the most valuable thing we may have done, as the days turned into weeks, is the question of aftershocks, because they're just scaring people to death. And they're normal.

COMMISSIONER SNYDER: Waht I meant is, had you preplanned messages to go on the air with — I mean, like a month or two ago?

MR. WATSON: Yeah. No, television doesn't work that way, television news, where you preplan things, because it's a moment-by-moment — we react to what happens, so we don't do that.

COMMISSIONER SNYDER: One of the channels in Southern California has actually filmed after-the-earthquake messages to put on the screen after an earthquake. And I talked to several people when I was up here, to see if that was a sister channel down there they can get the — you know, the footage from, and I don't know if that ever happened or not.

But, again, it's preparedness efforts like that. And I'm sure that you'll get into them now. But it's very helpful to have those messages already, you know —

MR. WATSON: Already done.

COMMISSIONER SNYDER: — canned and ready to go when the event does occur.

MR. WATSON: Well, the nature of the business is now, it's — I mean, we can — we can get that information on the screen almost instantaneously. So, preplanning doesn't loom very large, because we can do it so fast.

COMMISSIONER SNYDER: Well, these were actually film segments of families doing various things.

MR. WATSON: Yeah.

COMMISSIONER SNYDER: They were visual tools.

MR. RICHARDSON: Well, the question is, were those things planned for when a quake hits, or are those things that ran every week as a PSA or something like that?

COMMISSIONER SNYDER: No. They were filmed within the last six months, to be put on the shelf, to be put on the air when the event occurs.

MR. RICHARDSON: I don't think that we have that, no.

CHAIRMAN CLUFF: And one of the clips that I would recommend that you seriously consider is to clear up the issue about the natural gas. Many of the television and radios were instructing all of the people in the Bay Area to turn off their gas, when, in fact, that is not the recommended practice, unless there is a gas leak and they can smell the gas. And it took about two hours before the message got turned around, even though it's pretty clearly spelled out in the telephone book, the pages that are there.

MR. WATSON: Well, I think the crews that were in the Marina — I mean, it was terrifying — you could smell the gas, and there was the flames. And, yeah, your initial instinct would be to cut it out.

CHAIRMAN CLUFF: Well, that's clearly different. That was a localized, unique situation. And I talked to one of the PG&E gas people who was there, and he said he went into some of those buildings, and there may be 50 gas meters there. Which one do you turn off?

MR. WATSON: Right.

CHAIRMAN CLUFF: It was very difficult. But that was a localized thing, and for the whole Bay Area to go in and turn off their gas was —

MR. WATSON: I think that was a knee-jerk reaction, no doubt about it.

CHAIRMAN CLUFF: Yeah.

MR. WATSON: And it was coming from reporters in the field who were smelling gas. I mean, so they were — they were right about where they were, but they weren't right about the Bay Area.

CHAIRMAN CLUFF: Yeah. They weren't being specific about where they should turn it off.

MR. RICHARDSON: And one of the things you said, it might have helped also that if at the time of the quake, that these agencies do have somebody who should call the media right now and say, "Let me make this clear to you, that you should not tell people to do this; this is what they should do," and so forth, just to make sure that we've got our act together.

CHAIRMAN CLUFF: Tom, did you have a comment?

EXECUTIVE DIRECTOR TOBIN: We had an example of that given at one of our other hearings, where — I believe it was the public information officer for PG&E would aggressively call the media to tell them the messages and give updates on information.

And I guess my question is — you know, this is, I guess, a good example of getting information from the other side. Did you have other examples of other organizations that would actively use you to get the word out, or was that limited to PG&E and —

MR. RICHARDSON: Oh, the Red Cross, PG&E, Pac Tel — the cellular people came through. They wanted to get their phones out there and get folks hooked up.

Anybody else, George?

MR. WATSON: No. PG&E was good, I know that.

No, that framework does exist, but you made the point. It's got to be based on trust. The thought can't be of, "Oh, no, it's the media; let's keep those meddlers out of here," you know. And that thought does still exist out there.

But by and large, I think most of the major agencies did whatever they could to help us. It was just difficult communicating.

CHAIRMAN CLUFF: Thank you very much. We appreciate you coming over.

MR. WATSON: Thank you.

MR. RICHARDSON: Thank you.

CHAIRMAN CLUFF: The next part of our meeting is John Merritt, California Preservation Foundation.

We've had the opportunity, I believe, to talk to your group, or you personally — I don't remember, John. At least I know the issue of protecting those architectural classics that we like to protect, that they need seismic upgrading, and I think there are a number of issues that are out there that we would like to work with you to address, to make sure that in the tradeoffs that are made, the best judgments are made, and hasty decisions are avoided that may end up in some real serious mistakes.

MR. MERRITT: Yeah. I hope there's some media still here, because one of our problems is a translation of red tag into "condemned." And that kind of sets a tone for a lot of things that are happening in communities that you see in various releases or bits of information that kind of suggest that it's all downhill from here.

And I think one of our problems is that after the emergency is over is when all of our problems really start beginning.

I have prepared — well, it's in small print and it's six pages — I was going to read it. I'm not going to do that to you, and you probably wouldn't let me do it — but I will pass it out, and I would like to touch on a couple of things that we've gone through in the last three weeks.

My organization is a statewide organization. We're private, nonprofit, and in reality, it comes down to me manning the phones.

And I was struck by the communication questions earlier, on how difficult it was for me to get through to people, either on my board, or friends, or community activists, to find out what really was going on. In the case of Santa Cruz, it took four days; in the case of San Francisco, three days. And a lot was going on in the meantime.

When we started getting plugged in, I think we found that the results were mixed results.

If you look at a town like Los Gatos, where you had an estimated 10 percent of the building stock damaged, you had a fairly efficient emergency or disaster team out assessing them — I think this was the case nearly everywhere — and then you had a public hearing where the citizenry heard the results. And because there was a fairly well established preservation sensitivity in that particular community, the announcements, to the surprise of some people in Los Gatos, were, "We have a lot of damage, and we're here to help you repair and restore our town."

There were other towns that kind of got into this mode fairly quickly thereafter. In Los Gatos, we're talking about a meeting on Sunday, five days after the quake. San Francisco kind of has gone in that direction too, and I think you see some incidences of it in a number of other towns.

In other towns, contrary to that, I think there were clear examples of what we call pretext demolition, where buildings that were perhaps in the way, that redevelopment wanted cleared anyway — in one case, where a lawsuit by the local citizenry, the preservationists in the town, had kept it from being demolished — the town ordered the demolition crew and the ball out Wednesday, went through their rapid evaluation on Thursday — in other words, backwards. It was predetermined.

There are a lot of us who feel like economics made decisions that, according to the rules as we understand them, were not emergencies at all. We see the emergency situation over almost everywhere, if not everywhere, and over fairly quickly after this quake. No more people were going to die, and it was highly unlikely that any more buildings were going to fall over, damaging other buildings in the process, after the second day.

Nonetheless, in some cities, there were continued emergency declarations and demolitions. Our problem was, we really didn't know how the cities operated. We were not familiar with the emergency disaster plans, and we found that after we had regrouped, we were out of the loop.

There was mention of difficulty getting information from officials. We faced the same thing. In some cities, including this one, three weeks after the earthquake, we still don't know what the city manager's office has in mind for eight to ten buildings, he intimated this morning at a briefing, were probably long gone.

They may indeed be hazardous buildings. It's kind of hard for us to know sometimes, because, again, the technical expertise that we might be able to bring to the subject was never invited in.

I have a number of recommendations in the report that I prepared for this. And they run the gamut from getting back to some of the bills that were introduced this year.

We were particularly troubled to see SB 1088 vetoed the last day of the session. This would have created a local bonding for seismic work and historic buildings.

We think there need to be seed grants, in some cases, to encourage owners to take on the burden of doing the seismic work.

We'd like to see some tax credits for seismic work, perhaps with an added inducement for work done on historic buildings and done according to the Secretary's standards, which guide the rehab and restoration of historic buildings.

Going through OES publications like the manual, and what we presume most of the inspectors took out, we were troubled to find that the only reference to historic buildings in there is a comment about adobe being immediately suspicious.

Something that I got from the Bay Area Project is even more troubling, because there are many points in here about how you can get to the point of being able to legally demolish something. There is no information, no guidance, no encouragement, to get information about how you might save an historic building or a vintage building in general, that might be badly damaged. It's all rush to judgment. That's what we see in the manuals.

Therefore, I think we'd like to see some kind of language going into these manuals that says at least, "Let's red-flag the historic buildings, and let's take a real hard second and third look at them, with the professionals who might be able to give us some answers that our inspectors, drawn from all over California, may not have."

We're very troubled by the pretext demolitions. And one of the results was the insertion of a section into SB 3, Senator Marks' bill, which was signed by the governor on Monday, that calls for a reference to the State Historic Preservation Office if a city cannot demonstrate that you're faced with an emergency situation, a hazardous building.

We realize that this may be viewed as a punitive type of legislation, or hasty. I think it's to bring attention to the issue, and we would hope, with a lot of other affected agencies and groups like your own, that we can all sit down within the next month or two and put together a package of bills that are going to help us address our problems.

Finally, getting the expertise out there, I don't know who's on the list of OES volunteers who are assigned to communities. We rapidly put together a report in the first four or five days, which we sent out to everybody we could think of, identifying civil and structural engineers that we felt comfortable with, people who had experience with historic buildings, so that locals at least had access to somebody who might be able to look at it the way they looked at it, look at it through their previous work on historic buildings, and with their own similar care and concern for the preservation of these things.

Finally, you will see in here a suggestion that in order to improve communications and coordinate policy and program development, that perhaps the state Seismic Safety Commission and the state Historic Building Code Board and the state Historical Resource Commissions might create ex officio positions for each other, so that there will be more talk.

I realize there has been some difficulties with the state Historical Building Code Board, and I hope we can solve those real quickly.

We also have some jobs for ourselves. Obviously, the lists that come out of SB 547 need to be very closely correlated to all of the historic surveys, so that immediately, and in one place, somebody can note, "Yes, here's a building that's got some problems, and it was deemed to be important to the community; therefore, we need to show a little more care and concern, perhaps."

We're also a little troubled by some of the language that was coming out of FEMA and the SBA people about how you could use their funds. I got a call from the city lobbyist, City of San Francisco, regarding City Hall. She had been told that the FEMA money was going to be available for restoring the dome, which was going to be an expensive project because of the materials involved, only to bring it back into operational, functional condition. They estimated that the cost of restoring it was going to be twice what FEMA was going to be willing to fund.

Now, there is language about case-by-case treatment, but there's, again, no clarification there, and we don't think the message is getting out very well to people that these monies might be used for replacement materials, in-kind — replacement-in-kind materials, and that they can be used for saving buildings, and not just reconstructing new buildings after you push over the old buildings.

I will give Tom enough copies for those of you who might want to plow through my rhetoric and my experience in the last three weeks. This has not been a lot of fun, and we're continuing to lose things we care a lot about out there, good friends, buildings that people have put maybe ten years of their life into, bringing back and integrating into the community.

So, if I can answer any questions, I'm quite anxious to do so, and appreciate being asked to comment.

CHAIRMAN CLUFF: Thank you. We certainly appreciate you coming over, and we'd like to continue to work with you and others to see if we can't wrestle with these social issues.

From a personal point of view, I'm very sympathetic to the preservation idea and concept. Tom and I were in Santa Cruz and were able to see the Cooper House before it was demolished, and I was very saddened to hear that they were going to demolish it.

But it seems to me that it comes down to some social and economic tradeoffs, and it's how much people are willing to pay for preservation, restoration, and seismic safety. We're all in this tradeoff business. No one wants to spend a lot of money for either, as past experience will show us.

And so, sometimes we find ourselves kind of in competition with trying to achieve seismic safety. And yet, when it comes down to the economic decisions, it's the simpler way and the cheaper way to, perhaps, destroy a building.

And I can understand those individuals who would seize upon this opportunity and say, "Here's a chance to eliminate a problem and to actually make things seismically safer." I'm not necessarily sympathetic to that, but I can understand that kind of behavior.

So, maybe you could describe to us a little bit your thoughts on that process, on how we try to get society to commit more money to these efforts, when, in fact, they don't seem to be willing to afford these kinds of activities.

MR. MERRITT: Well, I'm glad you mention that, because I don't think we want to be known as people who have some affliction for architecture. I think we see this as social fabric, ourselves and our future, and certainly the building blocks for better communities.

The economic argument should be clearly stated. If it's an economic reason for doing that, I think everyone needs to be frank in the policy decisions at the local level. In many instances, we felt economic reasons were clouded in emergency statutes. The economics are not entirely clear in many cases. We may have individual situations where an owner is not experiencing the income flow that perhaps they had hoped for, and this is a nice opportunity to take the insurance and run. In other cases, we had absentee owners who couldn't have cared less, and they very easily signed off on demolitions.

What we are trying — planning to do in a town like Watsonville is to document what may happen there in the next five or ten years as a result of wholesale demolitions. And we think we're going to see something on a broader scale, a deeper impact on Watsonville than what has been reported in Whittier. You don't just walk back in there and rebuild buildings. Very often — and we think this will be the case in Watsonville — the downtown, as an investment arena for the financial, the lending community, is no longer there. They are not going to take risks, put their money into buildings that are going to generate 50-cent-a-square-foot rents.

In Whittier, we have seen the remaining buildings' rents escalate rapidly over the last two years, to the point where the mom-and-pop type businesses have been forced out. This is another economic effect that people don't think about.

There's also the argument to be made that if you could be a little more patient, you might find that rebuilding your building is going to be a hell of a lot cheaper than demolishing and reconstructing. You also might find — and this is where we were particularly frustrated —that there are a lot of programs out there, some of which are financing mechanisms, some of which are going to be created in emergency situations like this, some of which are incentives, such as property tax, Mills Act, that you could use, if someone in the community and the public sector was aware of these and had set them up.

Again, it's — we weren't prepared, and most of the communities weren't prepared either, to look into these kinds of alternative funding mechanisms.

I don't want to be seen as someone who comes in and says, "Throw a bunch of money at it." In many of the cases, we think it could have been solved without anything new, in terms of tools that were available.

CHAIRMAN CLUFF: Further questions? Paul?

COMMISSIONER FRATESSA: I think this is a very interesting presentation. I'm a structural engineer —

MR. MERRITT: I know you are.

COMMISSIONER FRATESSA: — and I've been evaluating buildings — I don't know, for the last couple of weeks — and I'm sure some of them are, quote, "historical," and I want to see them preserved. But I want to see if we're in synch, because I'm going to take you to two things and get to the third.

With regard to the tagging of the building, we've got red tags, green tags, and yellow tags. I'm hearing from you that we want to see there be a common understanding of what those tags mean.

MR. MERRITT: Yes.

COMMISSIONER FRATESSA: And so, red does not mean demolish.

MR. MERRITT: Um-hmm.

COMMISSIONER FRATESSA: Okay. So, I think I heard that.

The second is, after a building has been tagged, you want some sort of opportunity to have a better evaluation by a group of engineers, especially if it's historical —

MR. MERRITT: Yes.

COMMISSIONER FRATESSA: — if I can say it that way. So, if we could have the wrecking ball away for a couple of more days — and I'm thinking of a Watsonville church which has got that circumstance — there was a tendency to come in and want to tear that one down — it's an historical building.

MR. MERRITT: Yes.

COMMISSIONER FRATESSA: So, if I'm reading you right, those are two points.

The third, which I'm not clear on, and I think is important to the engineering profession is, given a damaged building and the restoration of it, is there any standard to which you think that building should be restored, in particular the talk of more or less the 1973 level of forces? Is that an issue, and do you have something to offer on that?

MR. MERRITT: Mr. Fratessa, I'm not an engineer, and I would be an idiot to even get into that, I think.

As I understand it from my perspective, there are differing views on how much is necessary to seismically strengthen older buildings. And they run the gamut from the Kariotis approach, which I think is typically cheaper and less intrusive, to doing it all and paying the price.

I don't know the answer. I know those are issues, and I think that's something that this body ought to be working out with the state Historic Building Code Board, so that you are in synch with them and that you're both putting out the same message.

Again, observing that entity from a fairly close affinity, they're not dealing with the issue. It's a fight over who's on first, it seems, and I would hope, out of this, we get together.

CHAIRMAN CLUFF: Yes, Bruce?

COMMISSIONER BOLT: I wonder, would you mind, Mr. Merritt, if I ask a question about preservation of another kind? And I promised to put this to the Commission today, and this would be an opportunity.

First of all, I'd like to ask if anybody knows whether there's any part of the Cypress section of I-880 which is not now demolished. You see — is there still bents which are up? I think there are.

CHAIRMAN CLUFF: I saw it on BART as I came over here.

COMMISSIONER BOLT: It was put to me at the weekend, actually, by a colleague at Berkeley who's professor of physics and the husband of a past member of the Commission, Rosemary Mueller, that the Commission might consider putting to CalTrans the preservation of one section of that as a memorial, so to speak, to this disaster, so that the public would be aware of what can happen when things are not done right.

I'm not saying that I support or otherwise —

MR. MERRITT: But you want me to say so.

(Laughter)

COMMISSIONER BOLT: But I take the opportunity, because preservation is in the title here, to raise it at this time. But I think — they put it forward in a serious way, and there is — there is something to be said for thinking, after a big earthquake, of preserving some damaged structure. And the Japanese have done this, going back a long way. You can go to places in Japan where faulting has been preserved by building a hut over it from last century, and so, that I thought I would raise the matter, Mr. Chairman.

I don't know whether you have any comments about that kind of preservation, Mr. Merritt.

MR. MERRITT: Well, history is history. It doesn't start fifty years ago. There should be some kind of remembrance of the event. I'm not sure what the proper structure or means of doing it would be, because you've also got, at this time, I think, a very big psychological effect of that there to remind people of a very recent horrible incident.

COMMISSIONER BOLT: Yes.

MR. MERRITT: You know, that's not for me to decide. The idea of commemorating is certainly appropriate. How it's done is somebody else's decision.

COMMISSIONER BOLT: Thank you.

VICE-CHAIR RIORDAN: Mr. Chairman?

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: I think, on the economics issue too, that it's important to recognize why some people go to certain areas, whether it's to shop or recreate or whatever. And I think that when people are considering whether or not to tear down a building, they should think whether — you know, whether or not people would shop in San Francisco, or come to Oakland for the weekend if there wasn't a Paramount Theater here, or looking out of the Hyatt Theater and seeing these great older buildings.

I would — I don't think I'd be that interested in coming to the Hyatt Regency here any more if you were looking out on, you know, a lot of new buildings. So, I think that should be considered on the economic side of it.

Also, you know, working in the Capitol, it's always — whenever I go through that older building, people are always remarking on that. That's kind of a noneconomic issue, but, I mean, the heritage that people that have about the state, the way they feel about it. And I think that was a great investment. It certainly would have been much cheaper to build a new building, but how would people have felt about it when they brought their kids to the Capitol, and what that said about the state?

But one thing, as John mentioned, the bills this last weekend about prohibiting tearing down historic buildings, whether they're on a federal, state, or local list, unless they caused a public threat to bodily harm and/or unless it was going to damage the adjacent structure, and also, it sets up a process for a team to review it before it's torn down — I know that there are some groups now that are — cities and counties that are probably going to react strongly to this, and think that the legislature may have gone overboard this last weekend in getting this in here.

But I can tell you, from the number of people that came to my office on Saturday, whether it's housing advocates, small business representatives, or whatever, they were appalled at what local governments have been doing the last two weeks, as far as tearing down older structures and not looking at them carefully before they did it.

And I again, you know, want to emphasize that the legislature's reaction to this is to try to just get people to stop and think about it, because even working on the Local Government Committee, I can tell you, again, local governments, I don't think, in this situation have been acting correctly.

CHAIRMAN CLUFF: Barbara?

VICE-CHAIR RIORDAN: Yes. Two questions.

I wanted to clarify one thing that you said, which was you were providing a list of people to local governments that had some knowledge about historic buildings and preserving those. Are you doing that in the Southern California area as well?

MR. MERRITT: Well, I was just down there for several meetings last week, and they want the same service.

VICE-CHAIR RIORDAN: We certainly would like that same service.

MR. MERRITT: Yeah. Yeah.

VICE-CHAIR RIORDAN: And I think that would help and maybe alleviate what Randy just spoke to, because I think, at times, particularly in these small, little cities who may have the treasures that we want to preserve, they just don't have the resources.

My information is Hollister didn't have a structural engineer for one entire week. Now, how are they going to make any kind of a determination? I don't know Hollister, but, you know —

MR. MERRITT: Yeah. They had to bring somebody in.

VICE-CHAIR RIORDAN: — what I'm saying —

MR. MERRITT: In fact, we all kind of facilitated the team that got down there by Monday, which is pretty good. And they went around with the building inspector, who —

VICE-CHAIR RIORDAN: Okay.

MR. MERRITT: — was won over, in a number of situations where he probably presumed it was a lost cause.

VICE-CHAIR RIORDAN: Okay. But I think having a list prior to an event is certainly going to be very, very helpful.

The second thing that I'd like to comment on, where I think your organization could be very helpful to us in local government, a number of these buildings are perhaps owned by local governments. And we sometimes can use community block grant funds from the federal government to strengthen those buildings. We've done that twice now in San Bernardino County.

But we've had a terrible time with HUD, quite frankly, particularly because maybe the building just doesn't sit quite in the area, in the particular census tract, that they want it to sit in. But it's used by the entire community, and so it qualifies, I think, you know, to assist low- and moderate-income people.

We could really use your assistance in lobbying on behalf of local governments in using those funds for seismic strengthening. Sometimes it's the only way communities can afford to do some of their public buildings.

MR. MERRITT: Well, there's also a Community Facilities Act. And I don't know if anyone's looked into that hard.

But we've had the same problem with HUD, since about 1979, on the application of those block grant monies for historic preservation or neighborhood conservation in general, when it wasn't within a predetermined area.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: Two comments.

The first one is, I'm sure you didn't mean it this way, but you made the comment that, you know, after two days, you were sure there wasn't any danger and so on, and it was very unlikely that buildings collapse. Certainly, in hindsight one can say that, but I — just a word of caution. And I think any structural engineer would tell you that we have to be very careful about that, and even after two days or three days or four days, you don't know for sure that a larger or a substantial aftershock might not come and cause damage. So, there is — we have to be very careful, and I'm sure you didn't mean it in that way.

MR. MERRITT: Yeah. I didn't say that.

COMMISSIONER IWAN: But it sounded that way.

MR. MERRITT: I didn't say it correctly. What I meant was, these buildings were nonaccess, and typically cordoned off.

COMMISSIONER IWAN: Yeah. And the other comment I would have is that you made mention about Watsonville and it's changing its character of the downtown area forever and so on. I think it might be interesting for you to do a study of what happened in Coalinga, a similar situation.

MR. MERRITT: It ain't there any more.

COMMISSIONER IWAN: Well, but they have — they have rebuilt the downtown area. And it would be interesting for you to look and just see how that relates.

MR. MERRITT: We — yeah, we intend to do that, because when Coalinga hit, we did have a structural engineer, Mel Green, do a study of that whole process. And I think that's when we first discovered the term "pretext demolition."

CHAIRMAN CLUFF: Mr. Merritt, we need to move on. Thank you very much for coming to us. We look forward to further cooperation to resolve some of these social —

MR. MERRITT: Let me leave some materials.

CHAIRMAN CLUFF: Thank you very much, yes.

While we are head timewise on the agenda by about fifteen minutes, I'm going to slip Jim Moore in for the next few minutes, with Alameda County Emergency Services. He has a time constraint where he's requested, since we do have a little time here, to talk to us about their activities.

And welcome to our hearing.

MR. MOORE: Thank you very much for inviting us to talk before the Commission today.

First of all, I'd like to say that in Alameda County, our EOC, we ran into some very fortunate circumstances in a very unfortunate situation.

Tuesday afternoons we have our regular management staff meeting for the Sheriff's Department in the EOC. It had just broken up, and I was walking out in the hall when the quake hit. It also contains our dispatch center, so, within a minute, we were back inside the dispatch center, and very shortly thereafter heard all the ambulances being dispatched to the Cypress center and so forth.

So, we had our EOC actuated probably within five minutes from the time that the quake hit, and fairly well staffed, right from the beginning. It wasn't long after that that the other agencies from within the county and so forth came back to the EOC, and we were — excuse me — we were operating pretty smoothly in a very short period of time.

Excuse me.

One thing that I would like to just say is that John Chamberlain's our dispatch manager, and he's going to address the 911 specifically, but I would like to say that the cooperation that we've had from the cities, and going on up, and the cooperation we've had with the state — because we're kind of playing the middleman in this thing, as the county agency — was just tremendous. It fell in place a whole lot better than what we had anticipated, and we're really pleased with the outcome of the way things went.

With that, I'll give it to John Chamberlain, and he can address the 911 specifically.

MR. CHAMBERLAIN: Well, from the county standpoint, the unincorporated area, our 911 experience was very positive. We experienced no failure. We missed four 911 calls during the first four minutes. But after four minutes, we started picking up and answering 911 with an average of 5.5 seconds per line.

The four calls that we missed during the four minutes were 2-, 4-, 9-, and 16-second duration. So, the 2 and 4 were impossible to pick up. All of those were marked and gone back on call-back by non-FESAP personnel, as quickly as we could get somebody over to another telephone.

I think that was a — it took us about five minutes in dispatch to actually recover from the jolt of the quake itself, and then, from the immediate, approximately seven times the normal load of incoming phone calls that really hit us immediately. They recovered within about five minutes.

We continued with a — for about four hours, with rather high call volumes. They started dwindling down after the second hour, to about 50 percent above normal, and stayed that way for the fantastic four days, and then they started slowly going down. By the seventh day, we were back to just actual normal operations.

But, again, we had nothing but positive remarks on the phone system and our own county microwave system. Our whole — we started getting microwave alarms on the county system, but we had no failures.

That's really about it, unless there's something more specific.

CHAIRMAN CLUFF: Let me make a couple of comments and open it up for general questions.

I believe it was said a moment ago that we were pleased on how well things went. This is a theme that we've heard over and over again. And it certainly demonstrates the value of preplanning and exercising drills and so forth. And everyone said how thankful they were that they had a lot of the seismic safety preparedness programs that were in place and had exercised those activities.

However, we were reminding everyone not to become lax, thinking that they've gone through the worst that it can be, because this really wasn't anywhere near the scenarios that we know are realistic, in terms of the East Bay, the Hayward Fault, while locally, in the Marina District in San Francisco and at the Cypress structure and other local areas, it was extremely devastating, but that was very isolated.

And so, we would want all of you people to not lay back and say, "We got it all together," but to take a look at having twenty or thirty Cypress type collapses in various parts of the East Bay, given a magnitude 7 earthquake on the Hayward Fault that we think is imminent, in the not-too-far-distant future. And we need to be better prepared and redouble, or quadruple our efforts, to implement not only mitigation, but better preparedness.

And I'd like your comments on what you learned out of this to improve your systems, because you are unlikely to have the communication that worked so well in this event.

MR. CHAMBERLAIN: Well, I think we're very well aware — I think one of the comments that most of the people working in the center — a great deal of our emergency calls are medical-related, and since we do the entire county on medical, Oakland is the heaviest portion.

So, one of the things that we know, the reason that we weren't — probably weren't overloaded on this one, is because that the greatest damage was in a portion of Oakland that we would normally be serving.

And what happened, the normal type — it just appeared that the normal type muggings and the beatings and different things just almost disappeared, probably due to the high influx of uniforms in the Oakland area, of all different types. So, we know we were fortunate on that.

The county communications, the base sites, are taken care of by GSA Communications. But because of OES preparations, they have previously gone out and tied down those sites, earthquake-proofing them. So, that, again, is probably another reason we were fortunate on the radio system.

MR. MOORE: One of the things I might add, too, in this regard is, we are seizing the opportunity in our OES. You know, prior to quake, it was difficult to get people's attention. And I think that's true everywhere. And recognizing that there is just a narrow window here, that we're going to be able to seize the opportunity, we're making hay while the sun shines, so to speak.

And I think we've got their attention. One of the things that we were discussing on the way up here today, that we actually started putting in motion, is building a secondary site out in the eastern part of the county. And we had room set aside for it, and we had plans on doing something, but nothing really ever got off the ground. This is in our new jail facility out there. And things are starting to move on that.

And it's that type of thing, and we're doing what we can to use the quake that has gotten people's attention to reinforce some things that we were trying to do before and just didn't have much luck.

CHAIRMAN CLUFF: Good.

Further questions?

Barbara, yes.

VICE-CHAIR RIORDAN: In your county, I assume that — I don't know why this isn't working, but I'll hold it down — that the greatest concentration of population is within incorporated areas. Am I correct?

MR. MOORE: That's correct.

VICE-CHAIR RIORDAN: Do you have much unincorporated area at all?

MR. MOORE: We have about 147,000 people in the unincorporated area.

VICE-CHAIR RIORDAN: Okay. So, not — not a lot.

MR. MOORE: No.

VICE-CHAIR RIORDAN: My question was, with coordinating — then, you obviously have a really major effort in coordinating with all the city Offices of Emergency Services, don't you, as a county?

MR. MOORE: That's correct.

VICE-CHAIR RIORDAN: Did that seem to go well?

MR. MOORE: Yes, it did. One of the things that we do, we have what we call an Emergency Managers Association, and we meet monthly, and we work with each one of the cities, BART, the Navy Hospital — there's a lot of people that are involved that are strictly with municipalities, but we meet every month and get together and go over plans. And that has worked very well.

VICE-CHAIR RIORDAN: Do you have drills that are together, as well, emergency preparedness drills?

MR. MOORE: We have, but not on a countywide basis. We have, with specific agencies, at different times.

VICE-CHAIR RIORDAN: Okay.

MR. MOORE: And we participate in each other's drills, and also go in as evaluators and so forth, but not as a whole county. We have not done that, until a few weeks ago.

VICE-CHAIR RIORDAN: Okay. Thank you.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Yeah. That triggered a thought in my mind.

How many cities within your county?

MR. MOORE: There are 14 cities, and one of the cities is fairly new, and a lot of the — a lot of the things that go on there, law enforcement, ammo control, and some other things, are still contracted to the county. So, there's really 13 others that we —

COMMISSIONER SNYDER: How would you rate your success or lack of success in obtaining accurate types of damage information from those cities when they were impacted by the disaster? Were you getting most of your information through the cities, or by watching television and radio?

MR. MOORE: Our initial information came mostly from the media. And it was difficult to get information from the cities. As far as major damage was concerned and where fire was being dispatched and where medical was being dispatched, we had that information there. Beyond that, as far as structural damage and so forth, our information was very limited.

It took some time before we could get that information in, realizing that everybody was busy, and we did have some phone problems. Most of the time we could get through, but to go in on a regular line, without going through their 911 system, we did have — we did have problems there.

But it's difficult, at a time like that, to start relaying information that is somewhat premature, because it's difficult enough to try to gather that information, and yet try to keep everybody else on top of it. Your staff is very limited initially, and until you get enough people in there to really do some assessment, it's difficult to say, except for the major structures, obviously.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Following up on that, getting the information, did you pursue with the cities getting — or did you call the cities to get information, or did you wait for them to provide information to you, or was it just kind of a combination of both?

MR. MOORE: After about three hours — well, after about an hour, we set up a damage assessment team within our EOC. And we had about four people assigned to that. And one of their jobs was to call, and we — we called each one of the cities every two hours, for about the first, oh, two days. And then, after the first couple days, we were just keeping in touch with the cities that were most impacted, mostly Berkeley and Oakland, some of Berkeley, the Port of Oakland, and those areas.

So, we did that on our own initiative, and then we relayed that stuff on into Region 2, OES.

COMMISSIONER EBERLE: How many people do you have on your staff that are devoted full-time to emergency management?

MR. MOORE: We have three full-time professional managers in our EOC, or in our OES. And I'm really part-time. I'm a division commander. Part of my duties are with OES and part of it are elsewhere within the department. We also have a couple full-time clerical staff, and that's it.

COMMISSIONER EBERLE: And do they coordinate with the cities on a day-to-day basis, other than your monthly meeting?

MR. MOORE: No, we don't. There's a lot of interaction that comes on occasion that's aside from the meeting, but it's not a day-to-day thing, no.

CHAIRMAN CLUFF: Commissioner Bolt?

COMMISSIONER BOLT: You said that by good fortune, there was quite a few senior people in the center when the earthquake occurred. How long did it take you to know where the earthquake was and something about it, and where did you get that information from?

MR. MOORE: Okay. Nine minutes after the earthquake hit, we got information through our NAWAS telephone in the dispatch center, the location and the size.

COMMISSIONER BOLT: From where?

MR. CHAMBERLAIN: From NAWAS — yeah, the National Advance Warning System. And that's just a ring-down line that comes right into our dispatch center.

COMMISSIONER BOLT: And where did they get it from? Do you know?

MR. MOORE: I'm not sure where their information comes from.

MR. CHAMBERLAIN: I'm not sure, but we will either — they will either send the information out from —

COMMISSIONER BOLT: From Sacramento?

MR. CHAMBERLAIN: — the University of California at Berkeley. It comes from Sacramento to us.

COMMISSIONER BOLT: Yes, yeah.

MR. MOORE: The call would be from Colorado.

COMMISSIONER BOLT: Because I'm very interested, as we go on in these hearings, we get more deeply into this whole question of the rapidity of knowledge about the earthquake, to know how the — how the OES center in Sacramento worked, you know, how effective it was. And so, it's interesting to know, when you go out on the tree, down the branches, how they perceive the flow of information and how that could be improved.

MR. MOORE: It seemed like it was almost instantaneous, because I think that first nine minutes went so fast that nobody really gave it a second thought.

COMMISSIONER BOLT: I don't think anybody except God knew where it was the first couple minutes.

MR. MOORE: Right.

COMMISSIONER BOLT: It took about half an hour for us to locate it.

MR. MOORE: Well, I thought that was very quick, to get that information that soon.

CHAIRMAN CLUFF: Well, thank you very much. We appreciate your coming over.

MR. MOORE: Thank you for the opportunity.

CHAIRMAN CLUFF: We need to move on to the next speaker. Gene Cross is here, from the University of California at Berkeley. He's associate to the vice chancellor.

And I'll remind the commissioners of the very interesting hearing that we had at UCLA, where Mr. Cross was one of the participants, and we agonized over some of the hard decisions that we all have to deal with when it comes to knowing that we have some very seismically vulnerable facilities, and not having the resources to adequately address them.

And so, Gene, we would hope that today you can bring us some good news, that thank heavens this earthquake didn't occur on the Hayward Fault — and it will, very soon, and we hope that this has been a shot in the arm to help your program move forward.

MR. CROSS: Well, thank you very much. It's my pleasure to bring you good news from the University of California at Berkeley, because the work that you folks have been sponsoring and the benefits that we've received on the campus has been very beneficial.

And we were extremely fortunate that we didn't have any serious problems on our campus. We had no loss of life or personal injury, and we had no structural damage in any of our buildings.

And I'm very pleased to say that we were able to provide an extensive amount of service, as has already been indicated by Professor Bolt, from the technical information from the campus, as well as we are able to offer our services through the other campuses in the Bay Area, as well as the other communities and things, because we were basically operational, even at the chagrin of many of our faculty and staff and students when the campus opened the next day, or to many of them.

But even our buildings that we just recently had seismically renovated, the South Hall, which is one of the original buildings on the campus, and Wheeler Hall, they came through in grand style. We just had absolutely no damage whatsoever, not even structural cracks in those buildings — I mean, even superficial of any consequence in the building, so that I think it really indicates the benefit of doing these programs that you folks are sponsoring within the state.

I do have a series of — a few of the pictures showing the indications of the superficial, nonstructural damage we had on the campus. If you'd care to take a look at them, I'd be happy to send them around for you to look at.

But all in all, I can say that we were very, very fortunate, even though, as we have been requested now by systemwide and the state to accumulate all of the costs involved — of course, these are mounting into the millions of dollars, even for the repair of the superficial damage and the losses of time and other types of activities and things that have gone on. When you go around and look, at the first look, it seems like — that you're really blessed, but then when you start adding up all of the expenses and things directly attributable to an earthquake like this, even when you basically have been missed, it still is tremendously significant.

And I think that's the message that — as you've indicated here, as I've sat and listened to the other testimonies and your comments — that the tremendous cost, first, of course, in the human costs of loss of life and injury, but then also the tremendous financial costs, in all of our communities and throughout the state, even when you don't have significant damage, that we're dealing in millions of dollars of just superficial damage. And I think that's something that is oftentimes overlooked, throughout the community.

I was asked to kind of address my comments about three areas: one, those things that went well; and those things that went wrong; and then, any recommendations we might have. And, of course, I'll be speaking purely from the community — or the campus perspective, not in relation to the community or the Bay Area at large — but those things have indirect, spillover effects, of course, into those other areas.

But we have had an Emergency Preparedness Committee and organization in place on the campus for the past few years, and we meet at least annually. And this is chaired by the chancellor and the top administrative people. In fact, it was fortuitous that we had an exercise planned prior to the quake for the week following the quake, and it was just to deal with a very small portion of chemical spills and toxics, and we regenerated that and, in fact, had a total exercise, where we actually had a whole afternoon session, and went through a mock drill, and went through all of the problems of communication and those types of things. And it was very beneficial.

But because we had that plan in place that — we had — our people in our maintenance areas were trained on how to inspect the buildings and to identify signficant superficial damage and these types of things — it enabled us to go through the buildings.

I was personally on the campus, and I was standing in front of a group of a people in an auditorium at the time, when it hit. And the first little tremor felt like another window-rattler, and then the second one hit and started rocking and rolling, and we said, "We'd better get out of the building" — out of the auditorium, anyway, because there was no place to protect ourselves. And, of course, by the time we just got out into the hall, well, then it stopped and we came back.

We had radio communication, and that was the thing I think is probably the most significant thing that is absolutely critical, because, as we all know, the first two things that go down in an major emergency are the electrical power and communications. And we have two communication sources, other than telephones, on the campus, in that the police have a radio network, and also our maintenance staff have radio networks. And I have a radio that I keep in my office.

There again is the personal analogy — I had it in my office for months and months and months, and I got tired of stumbling over it, so I gave it back to the control center. Then, when I went looking for it at the time of the emergency, I couldn't find mine, but I had to find somebody else's. And that's what oftentimes happens with emergency gear and equipment, is that you have it, but you don't use it enough, and then it gets misplaced.

And when you really need it — just like it was the testimony earlier here, when the — I think it was the radio station or TV station said they tried to start their generator, and it didn't work. And I've been associated with emergency equipment all my life, and all too often, of course, that's what happens.

But nonetheless, it pointed up the need for the minimum emergency equipment. It happened, as we all know, in the late afternoon. Immediately, we were engulfed in darkness, and without electricity you have no light. And, of course, the police are equipped with emergency material, and our maintenance people are. Our night crews were on the campus, and our day crews started coming back in, because we had communications with them, and we have communications emergency lists, call lists, these types of things, so that we were prepared in all of these areas where we could get ahold of these people and bring them back on campus.

So, from that standpoint, our response was adequate and worked well, for this level of emergency. And I emphasize for "this level of emergency," because, as I'll point out here in my comments, that we feel that we still found some significant gaps that we want to close and that we want to ensure that we can take care of a major problem, being so close to the fault, and also within the community of Berkeley and others.

We were able to actually inspect the buildings with our maintenance staff, and to isolate a couple of the buildings that we felt had significant superficial damage, so that we actually closed a couple of the buildings, and report to the chancellor by eight o'clock that evening, basically within about a three-hour period, that the campus, from a physical resource point of view, was functional and was operational.

And therefore, the administration then made the decision that the campus would be open the next day. And that's the reason the decision was made, along with all of the other concerns that have to be brought into that decision.

Those things that we feel that went wrong, as we've evaluated them — and these are surely not in any order of priority — but we felt that our coordination with our campus agencies, along with other community agencies and one thing and another — we basically operated in isolation. Of course, we are a city within a city, so, basically, we have to have that capability to a great degree. But we offered our services to the local community and to the outlying areas, but basically, that evening, that night, we pretty well were self-contained.

And it wasn't until the next day that we really had good communications with the other communities and the other agencies and OES and so on, to see what they were doing, and so that any thing that we were doing were in concert with them, so that we weren't doing things — especially in that we were open and operational — that we wanted to make sure that we were compatible with the larger community's efforts and didn't in any wise encumber the things that they were putting forward.

One thing we did find was that, in implementing our emergency preparedness plan, our plan is all or nothing, there isn't any intermediate steps. And we feel it's — that we need to evaluate that, and to come up with perhaps one or two intermediate steps of preparedness and/or action, because it was a situation where we had some interim considerations, but we really didn't have a set plan of what to do and how to do and how to inform.

For example, some of the people had recommended, "Well, that's fine, we need to have our staffs to come in to maintain the campus and security, and also to take care of the thousands of students we have on the campus, and food service and those kinds of things; we understand that, but perhaps we could have just done that and not had the rest of the campus community come back."

So, there needs to be at least one or two other interim levels of status on the campus, we found, so that we need to have, rather than just an emergency or nonemergency, we need to have one or two levels of emergency program that we need to implement.

Also, the other thing we found, and probably that applies in many areas, especially where they have a specialized type of activities, that on many of our labs and special type functions in the campus that had even special combination locks and things, because of the delicate nature and perhaps even the type of activity going on there, that we had difficulty in contacting the people in those labs and gaining access to those spaces, highly secured spaces, to check them out, and so that we need to — we have those on lists in places, but in emergencies it's hard to find those lists at times.

And so, we are going back and recommending that a nameplate be put on the door of those spaces as to who the current contact person is, as lists always become obsolete very quickly, that we found that we need to have a name and a phone number of a contact person for emergency access, right immediately adjacent to those spaces. And I think that probably applies to many other agencies and departments around the state, because it's oftentimes those types of things that are perhaps the most critical, because of what's behind those locked doors. The reason it's locked is because it's critical, and so, therefore, you need to have a technical, very qualified person to gain access to see if there's been any damage.

And, of course, on a campus, a research campus like ours, there's lots of chemicals and those types of things. I'm sure that you've heard from Santa Cruz, if they haven't already testified, that they did have some chemical spills and things down there. And those are the types of things we have to be very careful of on our campuses.

Our training, we found that prior training that we had done, as often training does in emergency situations, is only partially effective. Many of our people dove for under their desks and tables, and many of them used the old adage, "When in danger and when in doubt, run in circles and scream and shout." And they ran out of the buildings, and so on and so on, and didn't respond properly.

And we also found that many of our people had taken prior preparation of anchoring their large pieces of equipment and furniture and things properly, so that they wouldn't move around and fall over, but many had not, and so that we're working with them now.

And we even found too — another thing is that some of them had anchored them improperly, just by screwing the screws into the plaster board. Well, that only works very slightly, and we had — we received enough vibration that actually, it pulled a lot of these out of the plaster board, so that they have to be secured firmly in the structural members in such a way that they'll hold up under these things.

I've mentioned the communication aspects. We also found that, in line with the communication things, that we had a few people that — unit heads, because of their anxiety and concern, even maybe fear, that they secured their buildings on their own volition. And, of course, in an institution like ours, that's rather traumatic, because every time somebody does something, it affects others. And so, we had to go around and make sure why they had done this, and then we opened up some of the facilities that had been secured, because they had just been secured by their individual concerns, and not from a technical aspect, and so that we found that we needed to ensure that our leaders in these buildings and the unit heads knew where to check, so that they didn't take arbitrary action, because sometimes that arbitrary action can be just as negative as it may be positive.

The recommendations that we feel would be beneficial for us and others would be to have a more clearly defined coordination network, between us and our community neighbors and the OES and so on, so that we have a better liaison and communication in that aspect.

We outlined our emergency responses, to upgrade those things such as — even firefighting capability. It didn't affect us directly, as you know that there was one fire in the City of Berkeley.

And I was rather interested in listening to the comments with the media about how effective they were, and I would say "Amen" to that — but just to show you how garbled that communication can be, that fire in the City of Berkeley was within the block, the city block, of the City of Berkeley Library, and the communication went, bang, it was a fire in Berkeley, the Berkeley Library, and it was reported in the New York Times, I understand, as the "UC Berkeley Library," and we got calls from universities back east asking if they could help re-establish our library, and so that oftentimes there's as much bad information that will go out as well, and so we have to be very aware of that.

And that's the other aspect we found, we to institute an informational hotline, not the communication one to do the functions and the activities, but one that people can call. Now, on our campus, our police department is the emergency call-in place where people can call. But even there, we find that people get confused, and so that we have found that in emergencies, it's better to set up an informational hotline in an area where it's to do with the physical condition of the campus, for example, within my organization, that therefore, our people are knowledgeable about the particular emergency and can speak to those things, and to keep them informed as to the status of the campus, and to be able to answer questions that all elements of our community would have.

And we find that we need to implement that immediately, so that they have an informational hotline within our organization.

We also have used, very effectively, and permanently set up a coordinating committee for these interim type emergencies, and have done this effectively where we have not only this type of emergency, but large protests or any other of those types of activities on the campus that involves the people that are functionally responsible, as well as the public information people and so on, so we can get accurate information out to the people on the campus as well as the media in those types of things.

Another one that we've found was extremely critical since the earthquake, and that is that after the crisis, the care for the individuals, both physically and psychologically, because even — there are some people that even are traumatized to the point they're having difficulty coming back to work and so on. And so, we've found that within our community on the campus, that there is — this is a very real thing. And we have an organization on campus that — the acronym is CARE, logically, that literally goes around and has sessions with people to help them to readjust psychologically on the campus.

So, I think those are probably the basic things and the main things, and I'd be happy to answer any questions that you might have.

CHAIRMAN CLUFF: Thank you.

You mentioned some inaccurate information, or bad information, I think, was one of the words you used. And there's a rumor going around I'd like you to clarify or correct, or set the record straight —

MR. CROSS: Um-hmm.

CHAIRMAN CLUFF: As I remember from our meeting that we had at UCLA, there's three classifications, or actually subdivisions of these, "good," "fair," and "poor," in terms of the —

MR. CROSS: And "very poor."

CHAIRMAN CLUFF: And "very poor," you're right — four classifications.

The rumor that I'd like you to clarify is that the Chancellor's Office is moving people into University Hall, which is a "very poor" classification.

MR. CROSS: Um-hmm.

CHAIRMAN CLUFF: And if that's so, is that a risk that your office and the people that are moving there are willing to take?

MR. CROSS: Yes, it is, to give you a direct answer.

We have had — University Hall and California Hall, where the chancellor presently exists with his staff — are both "very poor" classified buildings by the '78 Degenkolb report. We have eight buildings on our campus that are classified "very poor" on our campus, and we have — I think it's 15 — eight are "very poor" and 19 are "poor," on our campus.

Systemwide, there are 20 percent of the buildings "poor" or "very poor," and 8 percent are "very poor," in the systemwide. These buildings have progressively higher risks as the scale goes down. But to put them — a lot of people say, therefore, they're unsafe.

Well, I would have to say unequivocally that the UC Berkeley and the University would not house anybody in a building that was felt to be unsafe. And though these buildings have a higher degree of potential damage and loss of life, that's true, but they have not been deemed to be unsafe, whatever that is and however you want to define that.

And we have had that reviewed and clarified by our consultants. We've had all of our "very poor" buildings looked at by structural engineers. That building, specifically, has been looked at twice, by Ed Zacker, a very — one of the most competent engineers, structural engineers, in the Bay Area — and verified that it has had no structural impairments during the quake. It is in exactly a comparable structural condition —

CHAIRMAN CLUFF: Condition?

MR. CROSS: — after the quake as before the quake. And all of our buildings have had no structural impairment during the quake.

That does not offset the emotional feelings and the attitudes of many of the people in the building, or even some on the campus. And that's the human aspect of this. And I surely want to emphasize that that's a very real aspect of what we have to deal with.

CHAIRMAN CLUFF: Now, is this classification, safe or unsafe, the "safe," does that have to do with the earthquake that just occurred, or does that have to do with an earthquake that is going to occur on the Hayward Fault, that judgment?

MR. CROSS: The "safe" term is one that is a value judgment.

CHAIRMAN CLUFF: Right.

MR. CROSS: And what I'm saying is that the value judgment, up to date, as of right now, by UC Berkeley and systemwide, is that those buildings are habitable and usable in their present condition and classification.

CHAIRMAN CLUFF: Fine.

MR. CROSS: But the term "safe" or "unsafe" has not been defined, and so, therefore, I can't really speak to your question about "safe" or "unsafe."

CHAIRMAN CLUFF: Okay. Thank you very much.

Paul?

COMMISSIONER FRATESSA: I'm going to ask you for — to be sure I understand what I heard.

I'm a structural engineer, and I have classified buildings on your campus by that system. And when we get to "very poor," we are talking about a building which has the potential for collapse.

MR. CROSS: Um-hmm.

COMMISSIONER FRATESSA: And forget the "safe" and "unsafe." And so, I didn't hear that as part of the risk.

And, I guess, question one is: given that as my interpretation, are you still willing to house someone in that building?

Secondly, the earthquake that we just had — I think we're talking 6 to 8 percent g on the campus — really should not have caused much damage at all. So, Ed Zacker's review of the building, as I heard it, was simply to say it did not cause much damage, which, to me, only says that it hasn't been made more unsafe, if, in fact, the building was classified "very poor." And I'd ask for your comments on that.

MR. CROSS: Okay. The building is classified "very poor." Let me just share with you the classification of what that means, if I can just excerpt.

In the "good," it says, "would not significantly jeopardize life." In the "fair," it says, "represent low life hazards," and in the "poor, it says, "represent appreciable life hazards," and in the "very poor," it says, "represents high life hazards." And then it goes on to talk about the potential degree of collapse, and so on.

And all of these are a method of trying to evaluate the degree or potential of hazard that's there. And there's no question that the lowest level is the highest risk.

The determination of whether it's safe or unsafe is a value judgment, as I said, that I know, on our campus, and I'm confident that systemwide, that if it was felt to be — or even had a high potential to that degree that would tip it over, a high potential for it to be unsafe, that we wouldn't house people in it.

I tell people all over our campus that we only have two options if something is determined to be unsafe. We either shut it down or we fix it before we will allow people to go back into it, when we deem it has a high potential to be unsafe. We don't wait till it is unsafe, but if it has that potential — that's a value judgment.

And so, what this says is — "very poor" condition, it says, "represents high life hazards," and it does. And about the only thing I can say is, this evaluation has been this way since the Degenkolb report in 1978. They've evaluated it for us again after the quake, and they're telling us that as they've seen the building over a decade period of time, that there has been no structural change in the building, so that it is basically the same structural condition now as it was before.

And we've housed — had our people in there for that period of time. And so, at this point today, there are people there, and as of today, there's no intent to change that.

COMMISSIONER FRATESSA: But the classification of the building has not been changed from "very poor."

MR. CROSS: That's right.

CHAIRMAN CLUFF: There are many people who would make the judgment a "very poor" automatically is unsafe. And I realize that that is a personal value judgment that certainly your people have been willing to make.

MR. CROSS: Um-hmm.

CHAIRMAN CLUFF: Bill, you had a question related to this?

COMMISSIONER IWAN: Well, I guess, just following up, I — you know, I'm not involved in the details of what you were saying, but certainly, on the surface of it, if someone, a structural engineer, tells me that a building represents a high life hazard, it's awfully hard for me to understand how I could say that's a — that it's not unsafe. Just maybe I'm not enough of a linguist, but something, to me, that represents a high life hazard is difficult to deem not unsafe.

But one other comment I would make. I commend you for trying to give some way to find potentially hazardous materials and people to contact, and I'd just make one suggestion to you. We've done this on the campus where I am. And I might suggest to you that you not just put a person's name there, that you put some more information, which very easily could be done, that you also list the contents, with the approximate quantities of the contents that are there, and not just one person's name, but two people's names and telephone numbers where they could be reached. You can do that usually on a plastic card that you can print up.

MR. CROSS: You bet. Those are excellent suggestions.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Well, I know in the legislature there's been talk about adding three new campuses to the University of California that would be brand new campuses, and therefore, adding capital outlay.

If we were to draw an analogy between CalTrans and the University of California here and the 880, we're talking about prior to the 880, certainly people could drive on it safely, as long as there wasn't an earthquake. Similarly, there are identified, on the Cal campus — and I'm a Cal grad and certainly have my heart to the school — also want to be certain that the University looks at the Degenkolb information as something that they should put in the forefront, and also, as Senator Alquist's representative on the Seismic Safety Commission at this time, also to look at it as not a duplication of what we saw on the 880, if we have a scenario on the Hayward Fault.

As you know, those are high-occupancy buildings, and as we have identified them as — well, not in terms of semantics an unsafe building per se, but as "very poor" — I think that the University of California may want to push forward the idea of retrofitting those buildings, in consideration rather than some of — in consideration with the overall plan of expansion of the University of California as well, because there's going to be billions of dollars spent on three new campuses.

MR. CROSS: Um-hmm, surely.

And keep in mind, I don't speak for the University of California. I'm just here from UC Berkeley.

I would surely say "amen" to everything that you've said. And we have been pushing forward, just as fast and as hard as we can. As I said, we have two buildings that have already been retrofitted seismically. We have a third one that's scheduled for this next year, with California Hall.

In relation to the overall classification of all of the buildings in the University system, as fast as we've been able to get funds, in our current capital building request, we have three requests in there, one for $8.5 million, one for $3 million, and another one for $3 million, undesignated, as Steps 1, 2, and 3, for additional seismic renovations. And as quickly as funds can be made available to do that, we're attempting to accomplish that.

COMMISSIONER UMEMOTO: Is that being put in perspective with Cal's campus to the UC system as a priority area in respect to all capital outlay projects?

MR. CROSS: Well, any time you request funds, it's not done in isolation. It's done in competition with all the needs of each campus and the total University system.

COMMISSIONER UMEMOTO: I agree with that, in terms of the — I know that the Cal campus lobbies for capital outlay funds as well as all UC campuses to the University system. And in reference to that, I just want to kind of get assurance that what you submit to the University of California system is set as a high priority, and with that emphasis that retrofit be done.

MR. CROSS: Well, I can assure you that we push for it and we have — do have now and have had in the past a request for funds for seismic renovation on our campus. And it's an ongoing request.

CHAIRMAN CLUFF: Keith — Keith, let me just comment before I call on Commissioner Bolt.

Mr. Cross was not at the meeting where we described — the meeting that Tom and I had with President Gardner, where, in fact, we had — where we had discussions with President Gardner and clearly got a clear commitment out of him, in terms of his own personal preferences. He's very committed to seismic safety. We were very impressed with his knowledge of the topic, his efforts to improve the level of seismic safety, and he and his other people that have the authority to build new facilities and fix up old ones have got a lot of hard tradeoffs and value judgments to be made. But out of that meeting, we did get a commitment for a significant commitment for new capital funds, a certain percentage of that to be allocated for seismic upgrading.

And while we haven't worked out the percentages precisely, it was certainly a significant amount, and I would hope we can continue to move and, with this earthquake, even increase that percentage.

MR. CROSS: I might just comment that University Hall has about 40 percent of systemwide and regents' people still left in it. So, they have a real sincere concern. They will be moving the balance of the people out by June, but they have a sincere concern with that building, as well as all the others, of course, because they have the total responsibility for all University buildings.

CHAIRMAN CLUFF: Bruce?

COMMISSIONER BOLT: Mr. Cross, I think a week ago I wrote a letter to the chancellor — I don't know whether you've seen that letter —

MR. CROSS: Um-hmm.

COMMISSIONER BOLT: — in which I pointed out that the accelerations on the campus were less than 10 percent of gravity, and so that none of us should take this earthquake to be a real test of the structures.

MR. CROSS: Um-hmm.

COMMISSIONER BOLT: Heaven help us if anything very serious would have happened in this earthquake, as a matter of fact!

I also wrote a letter to the president, really as a member of the Commission, in which I pointed — I again raised with him a matter that had been raised similar to our chairman's point, by the statewide

Academic Senate at a meeting here at the Kaiser Center about, I suppose, six or seven months ago, again where the president gave some assurance that he would — he would seek ways to obtain substantial funds for the upgrading and renovation of structures on the campus from a seismic point of view.

And I — in my letter to the chancellor, I first of all said that our Seismic Review Committee on the Berkeley campus, it seems to me, has been performing an important task. And we're meeting on Monday, by the way — I hope you can come.

MR. CROSS: It's on my agenda every time. Unfortunately, I've had conflicts.

COMMISSIONER BOLT: Well, that's an — you see, that's an example, I think, of a lack of — if you don't mind me saying, Mr. Cross — we're dealing with a very important matter here, and it seems to me that if the administration cannot clear their agendas to sometimes attend meetings to do with earthquakes, Mr. Chairman, it's some evidence that people are really not paying attention to the problem.

So that we're meeting on Monday, and I would hope that somebody from high up in the administration would attend that meeting.

MR. CROSS: Um-hmm.

COMMISSIONER BOLT: I wrote to the chancellor, and I said to him that this is an opportunity for the campus to push hard to get some more money. I have been on the Berkeley campus for 27 years, and we've managed to do three buildings.

You have not been there for 27 years, I think — I'm not blaming you for this.

MR. CROSS: Whew!

(Laughter)

COMMISSIONER BOLT: But I'm saying —

MR. CROSS: And then there are three — we've got three buildings.

COMMISSIONER BOLT: I'm saying that there has to be some speed-up of this process. And I said the same thing to the president, that this is an opportunity to lay before the legislature and the governor a plan to do something about the buildings in ten years.

MR. CROSS: Um-hmm.

COMMISSIONER BOLT: We can't wait another 27 years, I believe.

And I put it to you that, really, we have not done well enough. And we have to admit that, and we have to have in place plans to do something about it.

MR. CROSS: Well, I would just say that there's no question that we would like to have it move forward much faster, and we would like to have all of our buildings brought up to "good" status, and I'm sure that would go across the board for anybody in the system.

Bruce, if I can just make a comment on your letter, there was a typo by your secretary. Instead of saying "9 percent," it ended up "90 percent."

COMMISSIONER BOLT: Yes. That was replaced the next day, but I — that's correct, yeah.

MR. CROSS: Yeah. We were in real trouble there for a little while.

(Laughter)

CHAIRMAN CLUFF: Gene, you had a list in front of you and — to remind us.

MR. CROSS: Yes.

CHAIRMAN CLUFF: Would you mind just reading off the buildings that quality under "poor" and "very poor" —

MR. CROSS: Sure.

CHAIRMAN CLUFF: — just so we're aware of which ones they are?

MR. CROSS: You bet.

CHAIRMAN CLUFF: We can avoid them the next time we have a meeting there.

MR. CROSS: Okay.

(Laughter)

MR. CROSS: Well, just look at the historic ones and stay out of those —

CHAIRMAN CLUFF: Yeah.

MR. CROSS: — except for South Hall.

The "very poor" are the old art gallery — that's right behind Sproul Plaza. It's an anomaly there. That has the highest rating of being the worst building in the whole system, but that — we inspected it, and it's literally just a two-story pile of brick, and it didn't have a crack in it from this earthquake. I mean, it just didn't show any effect. But it has the poorest rating of any building in the UC system.

California Hall, which is scheduled to be renovated in July of '90 through '91; the Greek Theatre, up on the hill, the open theater; Hearst Mining Building — and I might say that the large classroom facilities in there have been secured for a number of years because of the seismic rating; the South Hall, which was renovated in '88; the campus garage, which is just off-campus, which really has no structural — it's just being used for storage and one thing or another now.

COMMISSIONER IWAN: Emergency vehicles, probably.

MR. CROSS: Excuse me?

COMMISSIONER IWAN: Emergency vehicles?

MR. CROSS: No, no emergency vehicles. The garage has been discontinued, so that it's purely for storage.

University House, the chancellor's home on the campus; and University Hall, which really isn't our campus building — it's a University building, but by next year will be — belong to UC Berkeley.

Those buildings that are rated "very poor" on the campus are some smaller buildings adjacent to the campus: 2420 Bowditch Avenue; 2515 — excuse me — 2521 Channing Way; 2538 Channing Way; 2536 Channing Way; 2251 College Avenue; 2223 Fulton Street — these are more or less one-story residential-type facilities — 2220 Piedmont Avenue —that's up by the football stadium, just across the street from the footbal stadium; the Biochemistry building, Earth Sciences, Harmon Gym, Dole Library — we have a request for Dole-Moffett renovation that will do some of the seismic work, not all of it, but some of it, as we put the addition in, and that's in our capital request, and we will be doing some of the seismic work as we put that addition in, connecting Dole and Moffett; McLaughlin Hall, Moffett Library — and there, again, we'll be doing some of that, but not all of it, as we connect those two buildings.

Parking structures: Parking Structure B, Parking Structure D — those were all inspected also to ensure their structural integrity.

2547 Channing Way; and the Residence Hall 1 Dining Commons — and those are under renovation; and Res 2 Dining Commons, and that is under renovation also. Both of those are scheduled. And Res 3 was "poor," but it was renovated and completed this last year. And so, all of the residence halls — the one has been done and the other two are on schedule, in process right now.

CHAIRMAN CLUFF: Thank you very much.

MR. CROSS: Um-hmm.

CHAIRMAN CLUFF: Any — yes, Randy?

COMMISSIONER PESTOR: Yeah. I don't recall anybody from UC lobbying for Senator Torres' bond bills the last three years, do you?

MR. CROSS: I'm not in a position to comment either way. I just don't know.

COMMISSIONER PESTOR: Okay. And, this past week, certainly CSU and UC representatives were in Sacramento, there to make sure that they would be able to get some money, you know, after a disaster.

We had bond bills — $1 billion bond bills — there was nobody from UC there. And I would just hope — and again, I urged this, you know, when we were down at UCLA — it would be real nice if we could get you all to kind of support us on the bond bills to do this, rather than just for new — you know, new buildings, during the budget process.

MR. CROSS: Um-hmm.

COMMISSIONER PESTOR: So, if you could try to do that, tha would be appreciated.

MR. CROSS: Sure. Well, I have sat in a number of meetings discussing this with the chancellor and others that do the lobbying work. And I know that everybody is conceptually in favor of it, and is supportive of it, but, unfortunately, I can't respond specifically to the question, because I'm just not knowledgeable.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: Yeah. Mr. Cross, you said there was no damage from the recent earthquake.

MR. CROSS: There was no structural damage.

COMMISSIONER KOCKELMAN: No structural damage.

MR. CROSS: We had superficial damage in the form of cracks —

COMMISSIONER KOCKELMAN: Yeah, I saw your photos.

MR. CROSS: — and those types of things.

COMMISSIONER KOCKELMAN: And you're aware that's 100 kilometers away, and it's only a 7.1. And then you say the buildings are not unsafe.

MR. CROSS: That's right.

COMMISSIONER KOCKELMAN: You wouldn't house children in an unsafe building. That's what you said, yeah.

MR. CROSS: We wouldn't — we wouldn't have our people placed in a building that was judged unsafe.

COMMISSIONER KOCKELMAN: Yeah. Which means you judge it safe.

MR. CROSS: That's right.

COMMISSIONER KOCKELMAN: That's a pretty strong word.

You report that your consultants put it down as a high life loss, and our chairman has said, in San Francisco and here, time after time again, that we expect a 7 up here again, in San Francisco or over in the Hayward. You probably heard him say that. It's in his notes.

And many of us believe there's a 50 percent chance in the next 30 years of a 7 up here, on your campus. And we reasonably, some of us, conclude that it's unsafe.

MR. CROSS: Um-hmm.

COMMISSIONER KOCKELMAN: And if you said there was no money, I'd find you credible. But you're not saying that. You're saying it's not unsafe.

And I've got a daughter over there, a young daughter, and I'm personally not comfortable with a high official like you saying it's safe. I'm just not comfortable with that. Does the chancellor and the vice-chancellor understand the probabilities of an earthquake on these buildings? Or are you speaking just for yourself?

MR. CROSS: Well, the classification, the definition of "safe" or "unsafe," of course, is yet to be determined, and that's what I said, is I know, on our campus, we wouldn't allow our people to be in an unsafe environment. And when the experts tell us something is unsafe, then we remove the people from it until we can make it that way.

The experts that we have counseled with have not said that it was unsafe. They have classified it and said that it was — represents a high life hazard.

COMMISSIONER KOCKELMAN: Yeah.

MR. CROSS: And that's a matter of degree, of risk.

COMMISSIONER KOCKELMAN: Yeah.

MR. CROSS: But that degree of risk has not been judged to be potentially unsafe.

COMMISSIONER KOCKELMAN: Okay. Well, I can appreciate where you talk to structural engineers and they'd say this building, you know, might collapse and it, you know, has a high life loss potential.

MR. CROSS: Um-hmm.

COMMISSIONER KOCKELMAN: But in the last year, we had other experts, one of them on this Commission, and many other topics across the country, say there's a high probability of having a 7 up here, you know.

MR. CROSS: Um-hmm.

COMMISSIONER KOCKELMAN: So, when you put those two together, I think you're talking about a different kind of calculus. And if you're a structural engineer, and you know statistics which I don't know, it would seem to me you'd be able to grasp that combination and come to a different conclusion than that it's safe.

CHAIRMAN CLUFF: Mr. Cross, maybe I could step and argue a little bit a with Bill.

Bill, when it comes down to judgments about seismic safety — and I wrote this in a paper a number of years ago — and it's the value judgment. When you look up "safe" in the dictionary, it says "free from risk or danger." Well, no such thing in earthquakes is free from all risk or danger. So, when it comes down to defining safety, there's a value judgment. And any facility is seismically safe if those authorities who are entrusted with that judgment say it's safe, they are willing to accept the risk that that's attendant to that judgment. That's just basically what it is.

MR. CROSS: And I might say, in relation to that, when you say "those authorities," which you've both spoken to, Chancellor Heyman and his staff from California Hall will be moving into that building from South Hall, which is also rated a "very poor" building. And they are scheduled to move in not later than May of this year and be there for at least a year, and so that they will be there on or by May of this year and live in that building for the ensuing year, personally, so that they have made that judgment not only professionally but personally.

COMMISSIONER KOCKELMAN: I have no problem with them doing that. They're mature adults, and if they do that voluntarily, and I as a taxpayer aren't liable for the damages to them, what about the nonvoluntarily — unvoluntary? Do you put students in those buildings? You've got quite a few on the campus. You must have students in those buildings.

MR. CROSS: There will be no classes held there. There will be no students that will function in there. However, their activities, the Financial Affairs Offices will be moved down there. Students will have to come down there to pay their fees, but there will be no students housed or taught in that building.

COMMISSIONER KOCKELMAN: That building? You told me you had about eight or ten buildings like that.

MR. CROSS: Yes. Yes, we do.

COMMISSIONER KOCKELMAN: And no students in any of those buildings?

MR. CROSS: Oh, yes. There are students in those buildings. Yes, there are. Yes. The question is, "Are there students in some of the 'very poor' buildings?" And, yes, there are. You noticed that I went through that list, that there were some classroom buildings, the Harmon Gymnasium building, and there's a number of students in those buildings.

CHAIRMAN CLUFF: Well, thank you very much. You've helped to surface what we've been doing here at the Commission, in trying to look at the process of deciding what level of seismic safety is reasonable and affordable, and what level of risk the society is willing to take.

And I think we're seeing, Bill, one view of that, from one perspective. And various of us may disagree or agree with that, but that's — that's what we're trying to do, is get this up on the surface and then setting a policy.

Our goal, in the Commission, is to recommend to the governor and the legislature a policy for the State of California that will help that judgment be more uniform, rather than individually made and highly varied.

MR. CROSS: And we surely support anything and everything you can do to bring that to pass, because we'd surely like to see that happen.

CHAIRMAN CLUFF: Thank you.

MR. CROSS: Thank you very much.

CHAIRMAN CLUFF: I believe Henry Gardener, City of Oakland manager, is with us.

Welcome to our Commission hearing. We have heard from the Mayor this morning about your role in the City of Oakland, and we compliment you on the activities that you've carried out during the emergency period. And what we'd like to do here today is hear from you about your experience of what worked, what didn't work, and how we can work together to improve, so that when the real threat comes, which will be here in the not-too-far-distant future, we're much better prepared than we are today.

MR. GARDENER: Thank you very much. Good afternoon. I recognize that you've been here since 8:30 this morning, and it's been a very long day for you, so I have spared you the reading of any prepared text. Everything that I say will be absolutely and entirely extemporaneously, and I hope that I can be brief.

We, like probably most Californians, have attempted to prepare for an earthquake of this magnitude, but probably not nearly as well as we should have, and we probably also belong to that class of what some psychiatrists are calling the state of perpetual denial, but October 17th really brought us to another level of awareness.

We organized an Office of Emergency Services about three years ago, and have fully staffed that department. One of the first things that we did was to completely rewrite our manual on emergency preparedness. And most of that really focused on earthquakes. We also conducted a number of workshops with our staff people over the last year and a half to two years, and in, I guess, a sort of ironic way, just a few months ago, had a simulated earthquake exercise.

On October 17th, we learned that the real earthquake worked quite differently from the simulation, if, for nothing else, people were in a true state of crisis and somewhat panicked — and that's understandably so.

I think that we were better prepared than, certainly, we would have been two or three years ago, and probably better prepared than some other jurisdictions.

I think that some of the lessons that we learned was that communications is absolutely vital, and we cannot always depend upon our standard communications network to work. And, in fact, it did not work, and we had to find alternative ways to instantly communicate with people. And I don't think that can be stressed enough, that alternative means of rapid communications must absolutely be established, and must reliable, and must be in place for the duration of the initial emergency.

We have very well trained people in our public safety departments, police and fire, and they performed at the highest level of expectation, by any standard of reasonableness. I don't think that we could have really done more, in terms of better training.

Better equipment, however, is something else. Oakland, like most cities in California, have suffered a number of financial setbacks over the last ten years, and we have been constantly trying to re-establish a capital improvement budget and operations maintenance budget that will meet our needs. But it is in the areas of adequate command posts, for example, built to modern standards — all that got put on the back burner, going back some ten years ago, and we still have not really been able to complete that.

We had a debriefing with the fire department. While we were talking, one of the fire assistant chiefs wrote down, "command post," and the assistant city manager nudged me and said, "Oh, I know what that's about; we'll talk about that later," that, you know, we need more than one, and we need more than one that functions.

So, we will now be spending a lot of our time and efforts looking at those kinds of things that, in the larger scheme of things, don't seem to be that immediate. And then, when the crisis is there, you realize that they are very immediate and very necessary. And we need to make those high priorities again.

We were able to evacuate people in a very timely fashion. The Police Department and the Public Works Department were able to do quick and initial inspections of residential hotels, and we did close a number of those and were able to get people safely removed from those into temporary shelters. The whole issue of how the shelters worked, of course, is another story, and I will just touch on that very briefly.

We need to do a much better job of being prepared to house a large number of people, for longer than a 48- to 72-hour period. This earthquake was not indiscriminate. It hit a very localized area of the community, and affected the poorest segment of the community. Some 90-plus percent of the people who were left homeless as a result of the earthquake were people who were just a step ahead of being homeless themselves. And a lot of services were needed, by the City, by Red Cross, by FEMA, by the county Social Services Department, and we have really been overwhelmed with that. We were not prepared to deal with it.

And I think long-term strategies have to be developed to respond to that kind of an emergency in the future. And that is, how do you house large numbers of people who are not really that well connected, who do not have the alternatives that many of us have, calling family members and relatives and saying that, "I've been put out of my house, and I'm moving in with you for two or three weeks until I figure out what I'm going to do." These are people who had no place to go.

And the City had to step in and deal with 800 to 1,000 people who, all of a sudden, were homeless and had no resources to do things on their own. It has overwhelmed the schools. The schools have been stretched to the limit. They were prepared to deal with this for 48, 72 hours, not for three weeks. We still are occupying two gymnasia in one of the high schools, three weeks after the earthquake. That is unacceptable.

We need much better coordination with the military. Those facilities should have been available. They need to be made available. The schools should not be asked to carry this burden for three weeks. Now, that is an area that we absolutely need to work on.

There are a lot of lessons, no doubt, to be learned from this. And I hope that if anything constructive can come from this — and I think there are some constructive things that can come from it — that now is the time to focus that attention and effort, now that we have people's attention and people are willing to take the emergency seriously. Now is the time to review requirements. Now is the time to review the structure of buildings. You were talking about UC Berkeley. There are plenty of them throughout this state that are probably in a similar state.

We need not to delude ourselves in believing that many of these buildings are going to stand in a major earthquake. Many of them are not. Many of them are not safe. It is going to be very costly to retrofit these old buildings. We will have a huge problem in dealing with City Hall. There is a lot of historic and sentimental attachment to that building. We're not going to be able to tear it down. We're going to have to figure out a way to properly restore it.

We are going to have a problem with employees not wanting to go back in that building unless that building is, quotes, "earthquake-safe." And we know that there are a lot of issues to be dealt with in that regard.

I would just conclude by saying that I learned at a very early age that perhaps education is the best medicine of all, and it is education, in my opinion, that we can use to our collective advantage as a result of this crisis, in getting people to focus on what we need to do in terms of bringing our buildings up to modern seismic safety standards, both in the public and private sectors, what we would need to do in terms of having shelter space ready and available that will not interrupt the schools, what we need to do in terms of preparing individuals to be able to really do a lot for themselves. And we were really not tested in that regard in this emergency. And the next time, we may not be so lucky.

The real shortcoming that I do not see an answer to is that local government will never be in a position to assist individuals in the first 48, 72 hours. People are really going to have to be prepared to pretty much fend for themselves, if we had a major catastrophe and fires burning out of control, and communcations down and equipment being used to take care of the immediate emergencies. Individuals are going to have to be prepared to pretty much take care of themselves. And I think that's going to require a much better educational campaign than we've been able to mount to date.

I'd be happy to respond to any questions you may have.

CHAIRMAN CLUFF: Thank you very much for that very concise, articulate presentation of the number of issues that we certainly need to deal with.

I don't know whether you were here early enough to catch some of the dialogue that we had with the former person, Mr. Cross, in his testimony about the University of California at Berkeley and the definition of "safe." You just used some words in your judgment that many of the buildings within the city are not safe. Could you kind of give us some insight in how you judge seismic safety and what ought to be done with those unsafe buildings?

MR. GARDENER: Let me first tell you what my qualifications are not. I'm not a structural engineer, and I do not have a scientific definition for any of these terms. But I have said to our City staff that I know of no such standard as "earthquake-proof." People have been saying to me that they want the building to be earthquake-proof, and I said, "Well, I don't think there is such a thing." And quite frankly, I don't think there is.

But when I use the term "safety," I'm talking about modern seismic safety standards. I don't think that we can design any building, or assure anybody, that in a major earthquake, that there will not be damage, and even injuries, and potentially deaths. But I think there are reasonable things that we can do.

And our standard, for City Hall and for the other buildings that we're looking at, is that we will bring these buildings up to modern seismic standards, to basically 1988 Building Code requirements. And that is going to be a very expensive undertaking, but that has been my message to our staff, that we're not expecting people to go back into buildings that we know are structurally unsafe. And in lay terms, which means in an earthquake of the magnitude that we recently experienced, that there is a high probability of loss of life or serious injuries.

CHAIRMAN CLUFF: Thank you.

Paul?

COMMISSIONER FRATESSA: First off, I am an Oakland structural engineer, and I'm proud of the way Oakland responded. The employees of Oakland did a marvelous job in this town, I know. I was very, very pleased with that. You should be commended. Your instructions to them were good.

MR. GARDENER: Thank you.

COMMISSIONER FRATESSA: When the Mayor was here, I didn't have the opportunity to bring this forth, and you're almost into the subject. I don't want to get into the difference between the 1988 code and what's generally accepted as a minimum level, or the '73 code. And that eventually will come in front of you.

But I would like to talk about unreinforced masonry and Senate Bill 547.

MR. GARDENER: Yes.

COMMISSIONER FRATESSA: Your staff has been working very hard on preparing something that will come before the council. And their technical nuts and bolts of that, they're doing a good job. But what will come up is a — well, I'll call it a political decision that you will struggle with, and that is, "Should the retrofitting or the bringing up of those unreinforced masonry buildings to some level be made mandatory on the owners of the building, or should it be made optional?"

And, two things. One, I'd like your feelings on that. And secondly, is there anything this Commission could do to help the council when they face that decision, because we do have testimony on the social and economic impacts of this?

MR. GARDENER: One, we recognize that to retrofit many of these old buildings is going to be an expensive undertaking. We recognize that with the buildings that the City owns.

We also recognize to make that requirement mandatory could force some owners of these buildings to simply not be able to operate them. It could have severe economic impacts.

What I think has to be balanced is the likelihood, again, that in a major earthquake, that there would be a major loss of life or serious injuries, and that has to be weighed against the cost.

And politically, we're going to have to decide what is an acceptable level of risk.

What I think that the Commission can do is to impress upon the legislature and the governor the need for making available to property owners low-interest loans that will assist them in undertaking these kinds of improvements. And now is the time, I think, to make that pitch.

But I am aware of the fact that this is going to be a very costly undertaking.

But, again, this is one of the opportunities for us. I think now may be the time that people will be willing to shoulder more economic responsibility for making some of these improvements than they would have been on October 16th.

CHAIRMAN CLUFF: Thank you.

MR. GARDENER: And I also think that our window is fairly narrow. I think, in a year's time, we may not have the mood that we have currently, and people may not be willing to dig as deep or to make some of the sacrifices, and there are going to have to be some sacrifices. But I don't — I think if we do not get going quickly, we will lose that, and this earthquake may become a distant memory in some people's minds.

CHAIRMAN CLUFF: Thank you very much.

Dan?

COMMISSIONER EBERLE: Yes, just a question of clarification.

You mentioned that you're dealing with the long-term sheltering of 800 to 1,000 people, and that no one really plans for that.

How is the financial burden of that being handled? Is that a City responsibility or other jurisdictions?

MR. GARDENER: Well, we have presented the case to the Senate Housing and Urban Affairs Committee, the proposition that that is a collective responsibility of the federal government, the state, and the city. The City alone is not responsible for low-income people, for housing them, and we cannot be.

The state has a low-interest loan program for owners of rental property, which was in effect prior to the earthquake. I testified before the committee and urged the committee to consider a grant program. That recommendation was not adopted. However, legislation was approved last week that provides for a low-interest deferred loan. And if the owner of the building continues to make those units available to the very low-income, then the loan may be forgiven.

And so, that comes close to being the grant. And that's the kind of assistance that cities will need to provide this kind of housing.

As I said earlier, the population that was affected really was not low-income. It was very, very-low-income. Over 90 percent of the persons made homeless as a result of the earthquake have monthly incomes of less than $300. So, we're not talking about people with annual incomes of $8,000 or $10,000. Their only income is SSI or general welfare assistance, and there is no such thing as affordable housing for this population, unless there is massive subsidy. And that is what it is going to require.

The City is prepared to make its contribution to that effort. In a recent study, Oakland was ranked number two nationwide for meeting its per-capita expenditure for very-low-income housing. And that commitment continues to be there.

CHAIRMAN CLUFF: Thank you.

Randy?

COMMISSIONER PESTOR: I'm not an engineer either, but I think that as far as the 1988 code is concerned, too many jurisdictions are requiring that these older buildings come up to the '88 code. So, because it — I mean, that — that's created a situation where people just say, "Oh, gosh, we can't do it," and then you might not have any of them being done. I mean, there's a Historic Building Code and what? — a '73 Building Code, and 60 percent of that, and so on.

So, I think it's — you know, if the City pushes the '88 code on all of these buildings, they'll probably just be torn down. Then you'll lose — completely lose your resource, I think, when you're considering risk and things like that. And, of course, working with Mr. Fratessa, I'm sure we'll have a lot of suggestions to preserve that as economically as possible.

VICE-CHAIR RIORDAN: Mr. Chairman?

CHAIRMAN CLUFF: Pat?

VICE-CHAIR RIORDAN: Oh, excuse me.

COMMISSIONER SNYDER: I was interested in your remarks about the housing for these folks and the sheltering for the first few weeks. What can the Commission do to help in solving this problem for future earthquake events, or is there anything we can do?

I know — I'm from Southern California — we faced this same thing two years ago with the downtown area, the old brick buildings being the ones that were heavily impacted, the people who could least afford to find alternate methods of housing. We find it in every earthquake.

And it's difficult to get this message to FEMA, because they thing more in a global perspective. And earthquakes are so different. It's the long-term housing.

So, how can we be of help in bringing something new?

MR. GARDENER: For the immediate emergency, I think there has to be an agreement ahead of time that military facilities, where available, can be used, because, again, if you compare our emergency with Hurricane Hugo, many of the people who were left homeless were in those school shelters for 24, 48 hours, and they did exactly what I said: they had moved in with family members, they had gone out and found their own housing, using their own resources. And that's what you would normally expect after the first 24, 48 hours.

But in cities like Oakland and Los Angeles and San Francisco, where we have very-low-income populations impacted like this, the school sites can not be the only shelter facilities. And we have a lot of unused military facilities that could be available, should be available, and we ought to have agreement, just like we do with the schools, in advance, that those facilities will be available to us. And we will not spend three weeks getting a runaround about getting people placed there and getting answers like, "We want families." Well, that's what the apartment owners say. We have to have institutions that are willing to take some of the alcoholics, some of the people who are emotionally unstable, people who cannot take care of themselves.

So, I would suggest that first, and we need to do that statewide to make sure that we have that commitment in advance.

Secondly, I think that, again, Los Angeles, San Francisco, Oakland, all the metropolitan areas, are going to be similarly affected. We need to push more for very, very-low-income housing, and we need to recognize that those are the housing units that are going to be lost in the event of an earthquake, and they will have to be replaced, or we will have 1,000 more homeless people on the streets, in Oakland alone.

VICE-CHAIR RIORDAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes, Barbara?

VICE-CHAIR RIORDAN: If I could — I represent local government on the Commission, and so have a great deal of empathy for what you are going through.

One of the things that I have said about the unreinforced masonry buildings and the things that we are going to have to require people to do, and give, I think, elected officials the comfort to make those kinds of requirements in their ordinances, is to have some demonstratable examples of the success.

And I guess I'd like to ask your opinion. One, do you think that would be helpful in the case of your city? And, two, if you think it would be helpful, would you be willing to participate? Because I did notice some masonry buildings that had been reinforced, and they looked to — at least on the outside, they looked very, very good compared to those that weren't, in the same block. Is that something you think would, one, be helpful, that kind of a factual demonstration? And, two, would your city be willing to participate with the data?

MR. GARDENER: The answer will be yes to both.

I think that we will have profited nothing if we cannot point to the things that worked in the cities that were impacted, and share that information with cities that were spared this time around.

So, I think the answer is yes to both. In fact, the answer is yes to both. One, I think it would be helpful. And, two, we absolutely would participate.

VICE-CHAIR RIORDAN: Great. Thank you.

CHAIRMAN CLUFF: Well, it's very appropriate that you would be our last speaker today. The first speaker was your Mayor.

And I just wanted to compliment the City of Oakland for the quality of leadership that we've witnessed here today.

MR. GARDENER: Thank you very much.

CHAIRMAN CLUFF: I would hope that the other places that we have our hearings, and the other cities and counties within the greater Bay Area, would take an example from the City of Oakland.

MR. GARDENER: Thank you. I appreciate those kind remarks.

Thank you very much.

CHAIRMAN CLUFF: That completes the formal part of our presentations. We don't want to lose the momentum that we have here to kind of summarize things.

I think this has been an extremely productive day, very fruitful. We've got a wealth of information and observations, issues, and recommendations for us to consider. And before we lose and forget about some of the things, perhaps we ought to take a look at some of the issues, as we did at our last hearing in San Francisco.

Tom, perhaps you have some thoughts, some insight that you might share with us at this point.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, I have some insights, but they're about ten pages long and much too detailed.

But let me tell you a bit of what we've started doing at the staff — on the staff.

During the special session, Senator Alquist — and I believe Assemblyman Cortese — I can never remember who is carrying what any more during the special session — but both have bills that would give the Commission $250,000 to do a comprehensive report on the Loma Prieta earthquake. And for a variety of reasons, an agreement was reached that the — rather than doing this through legislation, that the Governor's Office, by executive order, would transfer that money into our budget for us to do that study. And I understand the check is in the mail at this time.

And although the — we have had some discussion with the Department of Finance, and it's a matter of figuring out how to do it. We will be given the mandate, by executive order, to do the comprehensive study.

These hearings are really the first part of that comprehensive study, by laying out the issues, finding the sources of information, determining what's really important.

At the staff level, we've tried to start writing some of these issues down and to organize them. They would serve, perhaps, as an outline for the eventual report, and an outline for contracts with contractors to look into particular issues. And I won't try to go through them all with you. A lot of them have become very obvious.

But let me say that we — one of my favorite reports that I have on my shelf is the report by the — I believe they call it the Earthquake Commission, that was headed by Berkeley Professor Lawson, that did a landmark report on the 1906 earthquake. And this landmark report has been republished by the Carnegie Foundation. It's, oh, 12 inches high, and 6, 8 inches wide, and 3 inches thick, and accompanied by a very thick sheaf of maps.

And that is probably what this earthquake deserves. On the other hand, I know that there are only a few people who are ever willing to consider that their favorite book and to sit down and to thumb through it the way some of us have done. And as such, we have to also be looking to our audience. And the purpose of this report, it's not simply a matter to document this earthquake; it will be documented. But it's also a matter of trying to spur some activity and some policy movement at the state level and local government level.

So, as such, I think what we're looking at is something that will both be exhaustive, but also summarize, and something that's much more action-oriented. And it would have the chance of going on to the public policy agenda and our city councils and legislatures throughout the state.

The report, I would say, we would list issues and describe and discuss issues in one section. Another section, we can deal with geographic concerns. The earthquake will look differently, depending on where we are, and the issues that affect the Los Gatos area will be different from Watsonville and different from Santa Cruz, and certainly different from Oakland or San Francisco and the more urban areas. So, there may be some geographic aspects to it as well.

But we thought that each issue should have a discussion that describes what it's about, a statement of some findings or conclusions that have come out of this, with the policy considerations. We should identify research needs. We should also come up with recommendations for legislation that come out of this; and suggestions for changes to our five-year Earthquake Hazard Reduction program; recommendations to state, local, and federal agencies and private organizations; and, I think, just as important, an assignment of responsibilities, so at the end we know who is responsible.

A very good example is the matter of housing after an earthquake. Certainly that's something that can be addressed both by the legislature, by local governments, but also state and federal agencies, by their own administrative action, can go a long way towards serving some of these needs.

Again, as I said, just based on our last hearing, I have about eight pages in outline form of different issues. And so, I won't try to go over them, but to give some kind of a context, I think, to where we're going with these hearings, that, you know, that is how I see it coming together.

We will also certainly mine all of those research reports that are being done that will be funded by the National Science Foundation, the U.S. Geological Survey, and other organizations, and we'll press on state agencies, probably about twenty of them, to give us some very thorough analysis of their activities in their earthquake, performance of their programs, because I think that's part of it as well.

So, we will also then be cataloguing a fairly large data base, that perhaps will serve more as a source of information for researchers, but our products, I would hope, would be a well done, comprehensive survey report, as well as a summary that's going to be much more action-oriented and affect our leaders, local government, state government, and the private sector.

CHAIRMAN CLUFF: Fine. Thank you very much.

Yes, Bruce?

COMMISSIONER BOLT: I think that's — what you've outlined is an excellent idea. The state Earthquake Investigation Commission report is a best buy, actually — it's only $15, I think, but it's not — it's not a best-seller, as you say.

But I do hope that I will — and I'm sure you have plans — to allow enough time for the Commission to go around the table and to put forward ideas at any early stage, based on what we're hearing. I'm sure you have that in mind. And that takes time, but it could be well worthwhile so that those of us who have got our own list of things have a chance to argue them.

CHAIRMAN CLUFF: Yes. I would second Bruce's point, and just reiterate that it's, I think, wonderful to see the commitment that all the commissioners have made in coming to these hearings, and I would certainly urge you to continue. We can't totally stop the other things we're doing, but this is a time of emergency. In the recovery, our Commission is receiving the focus, and we need to provide the leadership that I think is sorely needed.

And just having these hearings, I think, is doing a great service to those individuals, to get things on the public record. But we need to commit our resources, both time and — mostly time — to work through this report and get it out in a timely way. We can't wait — I remember the big report that was done by the Academy of Sciences on the great Alaskan earthquake. It was a well done report, but it was too late, and no one ever read it. We've got to — we've got to be responsive and timely.

Keith?

COMMISSIONER UMEMOTO: Yes. Just a couple comments.

About two or three o'clock in the afternoon Saturday, this past Saturday, the Office of Emergency Medical Services had given me a call to say — ask for an amendment to that bill, adding another item to be looked at. And I pretty much assured that person that we would take a look at it, and I just wanted to just bring it up, and told that individual that we weren't going to amend the bill to that effect at that late time period and sacrifice, actually, the bill at the time.

So, that was — their recommendation was an emergency communication system, or looking at an emergency —

EXECUTIVE DIRECTOR TOBIN: Emergency medical communication system.

COMMISSIONER UMEMOTO: Yes.

EXECUTIVE DIRECTOR TOBIN: Yeah.

COMMISSIONER UMEMOTO: And another thing I'd like to add in regards to the study, I think it should be noted and acknowledged that Senator David Roberti, pro tem in the Senate, as well as Assembly Speaker Willie Brown, were the ones to make sure that Senator Alquist's proposal and Assemblyman Cortese's proposal were on the table, even the day before — actually, the last day of session, there was no per se guarantee that the Commission was going to get the quarter-million dollars for the study. And Senator Roberti and Willie Brown were pushing it.

I don't know if everyone here is familiar with the process, but basically, Senator Roberti, Senator Maddy, Senator — excuse me — Assembly Speaker Willie Brown, and Assemblyman Ross Johnson, all met with the governor to discuss what the overall proposal was going to be for the special legislative session. And although we did not get per se the — one of the bills to be signed as the Loma Prieta earthquake study, we did get it on the table to raise to the governor to make sure that he does fund the project.

CHAIRMAN CLUFF: Thank you.

Let's just go around the table very quickly.

Dan, did you have any comments you'd like to offer at this time?

COMMISSIONER EBERLE: Well, I certainly think about the homeless issue. I think it's a major consideration that we need to take into — as an issue to deal with. How we deal with it, I'm not sure, but I was — I was struck by that, the long-term sheltering.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: Two comments.

Back to the homeless issue. I almost should have told the Commission that five minutes from here, I could have taken you all to a building which describes everything that we've been talking about. It's a building right behind City Hall. It's on 15th Street, and that is a low-income housing, about six stories, built in 1913. It's got unreinforced masonry, and it is red-tagged.

And the — all of the economic social problems exist surrounding that. And can that building be rehabilitated? And it's going to cost about $20 a square foot to rehabilitate that building so it would be seismically safe. And that's $1.4 or so million, which is a big number averaged out over, I think, it's 67 units.

And I would comment that that's something we — that's a real problem in Oakland. I'm very interested in your comments, and we need to get that owner in touch with you so that we find a way to put that unit back on the market.

At this time, I wouldn't think the owner could handle that kind of number.

The second thing is that I've heard people with their plans on what they were going to do in the event of the earthquake, and they said, "Well, we had the plan; it didn't quite work." And then they listed things that they didn't know, or the surprises. And it would be real important to get — find out what all those were, because, on the other side, we heard that there were resources available that were not utilized. And whatever the plan would be to bring those together, somehow our report should focus on that.

CHAIRMAN CLUFF: Thank you.

Stan?

COMMISSIONER SCOTT: Well, I think this has been a very, very enlightening day, as well, really, as a very sobering day. We've heard so much, and good information and insights, that it is — it's sort of hard, impossible, really, to come to grips with it in short order.

I just had a couple of comments, in trying to think what I've heard today and what we've already known to some extent, just both the magnitude of the problem and the volume of resources that are really needed to deal with it, and yet it being underlined with this recent earthquake, the importance of trying to make some progress.

It seems to me we've got to move further in working on what we've talked about before, develop at all levels, state, regional, local, and in the private sector, a plan and some sense of priorities. You know, what do you start with, and in what order do you proceed? And then finding resources so you can — if you haven't made a start, make a start, and one that you can continue working on.

And it's clear that this is going to have to come from multiple sources, from the state, from the local, from the private sector. You can't expect the private sector people, for example, to take care of all of the costs of taking care of the private sector. You can't expect local government to do it all alone. Obviously, we heard about the very, very poor. Obviously, help is going to be needed there. So, looking for and finding resources is extremely important.

And then, finally, either keeping the process going, of doing something about these priority needs to be — hazards to be dealt with. If you've got it going, keeping it going and accelerating it, or if you haven't got it going, making a start, somehow or other, making a start. It just seems to me that's exceedingly important.

End of comments.

CHAIRMAN CLUFF: Thank you.

Bill?

COMMISSIONER KOCKELMAN: No comment.

(Laughter)

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: The two issues that I jotted down, one would be to echo what Dan and the others were saying on the housing issue. And that's both — that's two — two segments. That's short-range and long-range, the recovery part and also the emergency phase.

We do become very unwelcome guests of the schools after three weeks. We've experienced this in Los Angeles many times. After the Whittier quake, you know, they were — they were not happy with us in Belmont High School after three weeks when they needed their track back for athletic events. We'd been invading the gymnasium for three weeks. They wanted to have a homecoming dance, and on and on and on.

So, the schools are most cooperative for the first few days. That's what they're expected to be. But we can't expect to move into schools and stay for three and four weeks, when they have classes. There are security issues. There's other issues as well.

So, anyway, the short- and the long-range housing.

The other one that I think we need to examine and address is media, friend or foe. And I've done probably a 360 in the last five years, I would say. I was a field person for so many years, and worked out in the field in the shelters and with the folks, and the media were very difficult to deal with. But from the position I'm in now, I have found them to be a greater friend than they are a foe.

And I think a lot of it is attitudinal, but, again, we need to bring representatives of the media into preparedness. We need to be meeting with them ahead of time, not at the event, and trying to educate them on the street, so to speak, as to what the role of the fire department is, or why they can't get information, or why they can't get access to the 880, or whatever it is. We need to do a much better job, nationally and locally, of working with the media, because I believe they can be our best friends.

And as I heard today, the media was going to call OES to get information, but if you piece it all together, we heard from Oakland, the City of Oakland, that they were getting their information from TV and radio. We heard it from the county; they were getting their information from TV and radio. So, what OES was eventually going to give the media was what the media had produced.

So, we need to do a better job of integrating them into the overall picture.

CHAIRMAN CLUFF: LeRoy.

COMMISSIONER CRANDALL: I just wondered, Tom. Is the report the Commission is preparing, or going to prepare, intended to include technical matters? Because that will be done by other agencies, I think you said. For example, EERI has complete field — coverage of the complete field now, as far as technical matters go.

EXECUTIVE DIRECTOR TOBIN: No. I would say that we would not try to duplicate technical matters or make this a scientific report. On the other hand, I think that we're going to find that there are a lot of very significant technical conclusions that have come of this report that will provide —

COMMISSIONER CRANDALL: You would. Oh.

EXECUTIVE DIRECTOR TOBIN: — what I would consider extremely usable information —

COMMISSIONER CRANDALL: I see.

EXECUTIVE DIRECTOR TOBIN: — areas of liquefaction and strong ground motion, amplification of motion. We have yet to see what is coming out of the vertical arrays that the U.S. Geological Survey has on the soft bay muds in the South Bay.

COMMISSIONER CRANDALL: Okay.

EXECUTIVE DIRECTOR TOBIN: The performance of buildings. And a lot of these are technical issues, but —

COMMISSIONER CRANDALL: In summarizing, we may find that type of information will be very valuable in that, but we're not going to try and duplicate that.

EXECUTIVE DIRECTOR TOBIN: No. I think that we're going to need some technical people who can summarize that information, though, in a meaningful way, because perhaps we'll rely on specialties that we don't have available to us.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: I think Tom always does a good job.

(Laughter)

CHAIRMAN CLUFF: Yes.

EXECUTIVE DIRECTOR TOBIN: By the way, Mr. Chairman, I've already asked our commissioners from the legislature, Umemoto and Pestor, to write a chapter on the special session.

(Laughter)

EXECUTIVE DIRECTOR TOBIN: We will talk about the special session, but it was absolutely a unique experience, and one that may not be repeated until the earthquake. And I know that the legislature didn't expect the session the way it was. We didn't, certainly didn't, and I think there's probably a lot to be learned as well about that.

COMMISSIONER PESTOR: Are you talking about the comedy, or — those are secrets we would never want anybody to know.

(Laughter)

VICE-CHAIR RIORDAN: Best left not discussed.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: I guess just a quick comment.

I think that with a few noteworthy exceptions, that most of the people we've heard have a very realistic assessment of the risk involved in the seismic events that we're anticipating will take place. And I sensed a commitment on the part of public officials to do something about that.

And I think now the difficult part will be getting the resources, because I think it's going to be very, very expensive. I think our experience with the Whittier Narrows earthquake is — tells us that we have a time window that's very small, and that memory, both institutional and personal, tends to be very short.

So, I guess we've got to get with it, and not let any grass grow.

CHAIRMAN CLUFF: Barbara?

VICE-CHAIR RIORDAN: I just would reiterate and hope that we can follow up on the unreinforced masonry buildings that were reinforced and how they performed, and use that as a tool in which to motivate people to do much more than we have in the last maybe two or three years.

CHAIRMAN CLUFF: Thank you.

Sally?

(Laughter)

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: I think that we've heard the word "communications," "communications," and "redundant communications," and I think that ought to be an important part of any report that we finally write.

Secondly, we've heard much that was good, and I'm very pleased at that. But I am appalled at one piece of information I got today.

The University of California is fourth generation in my family, so I have a real interest in the place. And if we're talking about building three new campuses at the same time that we have buildings that — and I'm not — I'm a little shaky on this — and we'll have to go back to the structural engineers — but by any definition that we were able to get, they're about to fall down if anything happens.

And to be considering the three new campuses at the same time that we have property that is potentially a death trap, I think in corporate life, where I come from, if a CEO made that kind of a decision, he would be out beyond the directors and officers insurance that he had and into the area of personal liability. And I hope we can bring something like that to a positive note.

I'm not blaming Mr. Cross. I suspect that he's the messenger. But there is a decision point somewhere within that process, and I think a bad decision has been made.

CHAIRMAN CLUFF: Well, thank you. I think we've certainly gotten some excellent information.

Before we adjourn, Tom, could you kind of summarize tomorrow's activities and then next week's activities, so we can kind of see where we're going?

EXECUTIVE DIRECTOR TOBIN: Yes. Mr. Chairman, one of the things I wanted to add is that the legislature did not adjourn the special session, and so, on January 1st when it comes back into session, we have not only bills that were left over from last year, but we also have, by — I think the latest count may be 76 and may be 500 bills that were introduced during the special session.

There was a rumor, and I don't know if it was true, that 600 bills were handed in to the legislative council, and only 100 made it through the writing process. But I don't know if that's true or not. But 100 bills did go into print during the special session. And as you see, 24 of them were passed and signed, and so there's a very large number of bills that are active on day one. Rules may be different — I'm not sure.

These all offer us a tremendous challenge and opportunity. And much of the kinds of conclusions that we're reaching here and the problems that are being identified are, I think, all ideas that are ripe for amendments into these bills.

Last year we had what I thought was a very successful approach in some of our legislation, where we matched problems and needs the Commission had identified with bills that somebody else had put into the hopper for perhaps a different reason. And one of the best, and perhaps more far-sighted examples of this, was Assemblyman Areias' bill for local governments and the private sector to inventory existing bridges statewide. And when we asked them to add a seismic safety component to that evaluation of those 13,000 or so bridges statewide, it was taken.

And that's on the books, and I think that we've got to be looking very, very actively at how we can match existing bills with existing ideas that we have.

It's going to, I think, require far more than just the staff's long hours. It's going to also require much of your own individual review and comments on legislation, because we're going to have so much happening. It's going to be almost an overwhelming task. So, I also wanted to add that as part of how this information we're gathering can be used very, very quickly.

Tonight we have dinner reservations at a restaurant called the Silver Dragon. It's at 845 Webster, and those reservations are at 6:30.

COMMISSIONER CRANDALL: In Oakland?

EXECUTIVE DIRECTOR TOBIN: In Oakland. That's just about enough time for you to walk one lap around Lake Merritt and get back to the other side. But it's at 6:30, again, at the Silver Dragon, 845 Webster. The Commission — the Commission will pay the bill directly so that we don't have to worry about the per diem, so we'd like you all to join us at that time.

Tomorrow morning our meeting will continue at the San Francisco Presidio, the Officers Club Grand Ballroom, at nine o'clock. The meeting is expected to last until 4:30. The first half will be a business meeting, and then we will continue our hearings for the second half, in the afternoon.

The next hearing will then be in Watsonville, and the date just slipped my mind. I believe it's the 14th, in Watsonville at about nine o'clock in the morning. This is a change in what we've told you. In the past, we told you we'd be in Santa Cruz in the morning, and then go to Watsonville. We've had to reverse that because Watsonville has only one room for us to meet in in the town, and that's the City Hall, and the City Hall will be used for their first city council since the earthquake that afternoon.

So, we're welcome there in the morning. We expect to be in Watsonville, then, from nine to about noontime.

We will then drive to Santa Cruz, pick up lunch on the way, and resume our hearings in Santa Cruz at the Dream Inn at two o'clock. And we hope that that would last to about six o'clock. From there, dinner and on to San Jose.

Then the meeting will begin the next morning, on the 15th, in San Jose at 8:30, and again go virtually all day, to about 4:30.

COMMISSIONER FRATESSA: Where in San Jose?

COMMISSIONER PESTOR: County Government Center.

EXECUTIVE DIRECTOR TOBIN: County Government Center. That's right.

The next meeting of the Commission would then be on December 14th, back in Sacramento. Right now, I propose that we have both a business meeting as well, where we can deal with a number of pressing matters that we have to deal with, but we would also continue our hearings, especially then into the activities and information of state agencies that have been involved in the earthquake.

COMMISSIONER SNYDER: Was that changed? Wasn't that originally San Diego?

EXECUTIVE DIRECTOR TOBIN: Yes. It was originally scheduled for San Diego, and we've changed it to Sacramento.

One other note — and I believe Teri has spoken with all of you — but since the Watsonville meeting will be beginning at nine in the morning and it will be next to impossible for you to fly into any of the Bay Area airports early enough to get to Watsonville by nine o'clock, we would suggest that you use the Monterey Airport and plan on staying overnight, because it's a difficult place to get to in the morning, because of traffic and certainly because that area still is suffering from earthquake damage that's caused — that has resulted in detours and other traffic measures.

COMMISSIONER SNYDER: There's a lovely tent city you can stay in in Watsonville.

EXECUTIVE DIRECTOR TOBIN: It's right there.

COMMISSIONER SNYDER: Ramsay Park.

EXECUTIVE DIRECTOR TOBIN: Yes. It's — yeah, they — I think that we're going to find in Watsonville that the housing issues are so very different, and, again, just as desperate and just as important. But it's going to be a very different situation.

COMMISSIONER WASTE: Tom, what about reservations to stay for those two nights? Where?

CHAIRMAN CLUFF: Ramsay Park. You just heard
the —

EXECUTIVE DIRECTOR TOBIN: Ramsay Park.

Just a minute.

Teri, where will we be staying the night before the Watsonville meeting?

MS. DE VRIEND: At the Dream Inn.

EXECUTIVE DIRECTOR TOBIN: At the Dream Inn in Santa Cruz. We're going to do some driving back and forth, but the Dream Inn in Santa Cruz the night before the Watsonville-Santa Cruz hearing.

COMMISSIONER SNYDER: And then where the night of the 14th? Same place?

MS. DE VRIEND: At the Hyatt in San Jose.

COMMISSIONER SNYDER: Hyatt San Jose.

EXECUTIVE DIRECTOR TOBIN: The Hyatt in San Jose. We — one way to keep from adding to the traffic congestion will be for us to have our meetings till late at night and travel when it's even later.

You know, I too want to echo the chairman's remarks about the dedication that each of you is showing. It's — I know it's difficult for our staff to put in the hours at these meetings and so forth, but I know it's doubly difficult for all of you, because besides being commissioners, you all have full-time jobs and other commitments. And it's very important, and I think it adds measurably to the strength of the Commission.

And I guess I should tell you that your staff is really very proud of you as a Commission, so thank you.

CHAIRMAN CLUFF: Well, Tom, we'll want to pat each other on the back here. But you and your staff certainly have done just an outstanding job in this time since the earthquake. And thank God for your cellular phone keeping us all informed. I realize it's been driving you nuts, but it's been very helpful. We want to commend our staff for the dedicated effort that they've put in.

EXECUTIVE DIRECTOR TOBIN: Thank you.

(Applause)

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, I realize we made a strategic error, because had we waited until the cellular phone company offered free phones and free services, we could have saved a lot of money.

(Laughter)

COMMISSIONER CRANDALL: Point of information, Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER CRANDALL: I neglected to mention that a radio station in Los Angeles announced that there's a small tropical fish known as an oscar — I'm not familiar with these things — but that is very good at giving advance warning of earthquakes. And when they checked on it, they found it was covered with little Richter scales.

(Laughter)

CHAIRMAN CLUFF: Thank you, Jim Berklund.

Meeting adjourned till tomorrow morning.

(Thereupon, at 5:25 p.m., the meeting was
adjourned.)

# California Seismic Safety Commission
## Loma Prieta Earthquake Public Hearing

# San Francisco

November 9, 1989
Grand Ballroom
Officers Club, Presidio of San Francisco
San Francisco, California

**Loma Prieta Earthquake Hearing**
San Francisco
November 9, 1989

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## PROCEEDINGS

CHAIRMAN CLUFF: Thank you.

This is the regular meeting of the Commission, scheduled here some months ago. And while we've had some very important hearings and we will continue that hearing process this afternoon, we have some items of business that were on our regular agenda and schedule to take care, and so we will spend the morning dealing with those items.

A little bit later, we'll have an opportunity to talk to and welcome the — or receive a welcome from Lieutenant General Baxter of the Presidio. And so, we understand he'll be here in about twenty minutes.

I don't have any further remarks, other than that I think our hearing process is going very well. The meeting yesterday was, I think, a very fruitful discussion, where a wealth of valuable information was entered into the record that I'm sure will be of great assistance to us in helping establish seismic safety issues and what levels of seismic safety society is willing to pay for, and this ever-burning issue of what level of risk is acceptable, and how various people look at that.

I think that parts of our meeting yesterday dwelled on that. It's a very important aspect of understanding that process and how different people look at seismic safety, and what level of risk is acceptable.

Let's go to the approval of the October minutes. Do I hear a motion?

COMMISSIONER IWAN: So moved.

COMMISSIONER FRATESSA: Second.

CHAIRMAN CLUFF: Moved and seconded.

Any corrections or discussion of the minutes?

(No response)

CHAIRMAN CLUFF: Hearing none, then, all in favor of approval of the October minutes, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

We'll move on to the Executive Director's report, and then hear from General Baxter a little bit later.

Tom?

EXECUTIVE DIRECTOR TOBIN: Thank you, Mr. Chairman. And if General Baxter comes in, then I'll just interrupt my report —

CHAIRMAN CLUFF: Fine.

EXECUTIVE DIRECTOR TOBIN: — if that's all right.

I have a number of items I would like to bring up with the Commission, and I know that we've all been very busy. This is a chance for us to get caught up, I guess.

The first item, one that we discussed with the Executive Committee last night, the Earthquake Engineering Research Institute is planning to carry — or to sponsor a number of hearings or presentations, seminars across the nation, beginning with one in Washington, D.C., regarding the Loma Prieta earthquake.

And as we have done in the past, they would like us to co-sponsor those. Co-sponsoring does not entail a financial expense on our part, but allows us to lend our name, to give credibility to these seminars, as well as, probably, participate in the ones that are closer to home.

And we discussed this with the Executive Committee last night, and it was agreed as a recommendation of the Executive Committee that the Commission co-sponsor the Earthquake Engineering Research Institute seminars.

CHAIRMAN CLUFF: Do you need an action on that, Tom, or —

EXECUTIVE DIRECTOR TOBIN: We can.

CHAIRMAN CLUFF: Okay.

COMMISSIONER IWAN: I would so move.

COMMISSIONER CRANDALL: Second.

CHAIRMAN CLUFF: Moved and seconded.

CHAIRMAN CLUFF: All in favor, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: The motion carries.

EXECUTIVE DIRECTOR TOBIN: Another housekeeping item, Mr. Chairman.

The April meeting is scheduled for — the exact date has slipped my mind, but that's during a week that is very commonly Easter week for schools. And I know the schools vary, either with vacation the week before Easter in some cases, and usually the week after.

CHAIRMAN CLUFF: April the 12th, the day before Good Friday.

EXECUTIVE DIRECTOR TOBIN: And so, this week it's the day before Good Friday. And the question is whether or not we should reschedule that Commission meeting to a time when we don't have conflicts with, you know, the Easter week, or plans. And I was wondering if any of the commissioners had any strong feelings on that, and how you would like to deal with that potential conflict.

COMMISSIONER SNYDER: Well, the plans — we'd change the date, or just to eliminate the April —

EXECUTIVE DIRECTOR TOBIN: I'd say we have three options. One would be to eliminate the meeting. Secondly would be to move it to a week where we would have no conflict, and, you know, either move it up or move back or leave it where it is. My suggestion would be that if that is a conflict, that we would go with the week earlier, because the week after Easter is vacation week for some schools, and it might create problems for others when we — if we move it.

COMMISSIONER SNYDER: Since April is Earthquake Preparedness Month in the state, I think it would be inappropriate to eliminate the meeting.

EXECUTIVE DIRECTOR TOBIN: I agree.

COMMISSIONER PEAK: That would also be the Alphus Awards ceremony, at whatever date I had asked Tom to look into this — because of that, we have to start setting them up. So, the annual ceremony, luncheon and so forth, would be coincidental with the Commission, whatever its schedule.

EXECUTIVE DIRECTOR TOBIN: My proposal would be — not hearing some strong feelings, my proposal would be to move the meeting up one week, to April 5th, Thursday, April 5th.

CHAIRMAN CLUFF: And do we have a place for that meeting yet?

EXECUTIVE DIRECTOR TOBIN: We would — the tentative place is in Sacramento, and we would hold it in the Capitol.

Okay. Hearing no objection, then, we will certainly get the word out that the April meeting has — will not be on our regular meeting date. It will be on the first Thursday of April, April 5th, in Sacramento.

The Commission has a contingency fund with $79,000 in it. The purpose of the contingency fund is to respond to and investigate damaging earthquakes. The intention would be that the money would be allocated very quickly. After an earthquake, when we've asked for this, this funding source and authority, the argument was that we did not, as an agency, want to, as a matter of policy, pursue the deficiency funding process that some agencies use after a disaster, where they just spend the money, then afterwards go for a budget revision through the deficiency process.

One of the main reasons for that is that our budget is very small. And if we run up expenses, and the deficiency process is not allowed, we're in deep trouble, because we don't have the kind of flexibility the larger agencies have.

Second, you know, I would prefer that we always within what our budget resources are, and not go out and gamble in terms of a deficiency process, not that — that might be the right way to go, but we do have this $79,000 in our budget. The $79,000 has to be used — or, excuse me — the $79,000 would have had to have been spent during this fiscal year, but legislation has gone into effect that allows us to carry that forward.

The $79,000 is a small amount for responding quickly to an earthquake like the Loma Prieta earthquake. And we've looked at the Commission's funding commitments, and they — $25,000, or about one third of it, will be the added — would cover the added expenses of these extended Commission meetings and extra Commission meetings, of hiring of the transcriber or the court reporter for the transcript.

And $25,000 is about what we will need to cover the overtime expenses that the Commission is encountering through the next few months.

The third $25,000 or so, we believe, is available — safely available, for some short-term contracts to pursue issues that are of particular interest to the Commission, where the information available is perishable, so that if we don't do it, the information will be lost; secondly, information that's unique, that we don't know of others that are pursuing the same; the third, that it furthers initiatives in the *California At Risk* program; and the fourth, that it be within our funding limitations.

We discussed last night with the Executive Committee a number of possible contracts. I don't have them numbered, but I think it's about twenty in number, and they varied from proposals that others have made to us for sums that exceed our resources, of $40,000, to some that are very small, appropriate studies, but not necessarily the Commission's responsibility: for example, a very interesting proposal to monitor marine terraces after the earthquake because of some of the landslides. You know, this is an important issue, but one that's not necessarily the responsibility of the Commission.

Fred Turner has taken this on, to read them all, to rank them, to talk to people about these different proposals. And I would like to propose to the Commission that we enter into two quick contracts at this time, both of which would be less than $10,000, around $9,500, both of which are parts of bigger problems, or problems that are directly of interest to the Commission.

The first would be to extend a survey of damage to unreinforced masonry buildings. We heard from the City of San Francisco in this room last week about the study that they have done of their unreinforced masonry buildings and the response to the earthquake, and how they've rated them.

This is a very important data base, but it represents the performance of these buildings located, perhaps, 60 miles from the center of the energy release, and we're not getting complementary data out of the jurisdictions that are closer to the earthquake, and where the performance of the unreinforced masonry buildings was different because of greater intensity, in particular, Los Gatos, Watsonville, Hollister, Santa Cruz.

And so, the idea of this proposal would be to try to quickly gather the information on these buildings, before those that have been damaged have been torn down, and to be able to do — to add this to the data base on performance of unreinforced masonry buildings, both those that have been retrofitted and those that have not.

I'm looking for Fred to see if I've accurately described this, but —

Yes, Commissioner Riordan?

VICE-CHAIR RIORDAN: Well, I'm prepared to make a motion, because I, obviously, feel very strongly about that study as it relates to local governments and their ability to pass the necessary ordinances to achieve the retrofit program. So, when discussion is over, I'd like to make that motion.

EXECUTIVE DIRECTOR TOBIN: Okay.

COMMISSIONER CRANDALL: Tom?

EXECUTIVE DIRECTOR TOBIN: Yes, sir?

COMMISSIONER CRANDALL: Would you clarify what area we would study, the buildings would be studied? Did you say just San Francisco, or the whole area, to Los Gatos?

EXECUTIVE DIRECTOR TOBIN: No. We would try to extend this to the whole area. The City of San Francisco did take an evaluation form out and evaluate their buildings. And what we have tried to do is to get the same form into the hands of other building officials, and Fred has been working with building officials in Oakland, for example, and asking that they try to fill out the same form, to complete this data base.

It won't be done universally, unless we get into it with some money. You all are familiary with the structural engineers' voluntary program, and it's one of the things that we've suggested to the city officials, that if structural engineers volunteer their services, and they need to have something for them to do, of great value to us would be to take these forms out and look at the unreinforced masonry buildings.

COMMISSIONER CRANDALL: That's fine. I was unclear on just what area we were talking about.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: Yes.

CHAIRMAN CLUFF: It might also be helpful if you could explain that a $9,000 or $10,000, or even $100,000 contract, is not going to really address the entire issue, and that this is seed money to help move an important thing along that's going to cost a lot more in the long run.

EXECUTIVE DIRECTOR TOBIN: Yes. I think the purpose of this is really to capture this data base as fast as we can before it's lost. But this is certainly part of a much bigger issue having to do with the performance of strengthened unreinforced masonry buildings, as well as ones that have not been strengthened.

During the structural engineers' briefing, for example, there were some slides shown of some unreinforced masonry buildings and the performance of spandrel beams. And a few comments were made as to whether or not some of the basic assumptions on how they buildings can be analyzed hold true. And, you know, this is a data base that would help us deal with that.

Commissioner Bernson?

COMMISSIONER BERNSON: Yeah. I think it's extremely important that we proceed and get as much information as we can. I wonder if we're going to just — are we just going to deal with URM's, or are we going to get into some of the pre-1971 type buildings as well, if there was any damage in some of these areas?

EXECUTIVE DIRECTOR TOBIN: Well, the purpose of this contract would be to deal with the URM's, and it would — it's such a big problem that the money available to us won't allow us to get into the other types of buildings.

We are trying to encourage some extensive studies of other buildings, because we have examples of buildings of other construction that performed quite well under unusual circumstances, as well as some that have performed poorly. And there's certainly a wealth of information, but we're looking to others to study that.

COMMISSIONER BERNSON: Well, I just wondered, if the money should be available, or it's not too big a problem, we should try to incorporate, where possible — particularly if we're using volunteer type personnel, and this is seed money — to try to get as much information as we can on some of the other suspect buildings as well.

So, that would be my — I won't put that in the form of a motion.

CHAIRMAN CLUFF: Yeah.

COMMISSIONER BERNSON: I'm just speaking in support of Barbara's motion.

EXECUTIVE DIRECTOR TOBIN: Next Friday and Saturday, there will be a meeting regarding research needs, involving National Science Foundation monies and other federal agencies. And I think that, you know, that point is one that we can drive home very, very hard, because I agree with you, it's important. And I think it does exceed our resources, but we've got to work very hard to get others to pay for that kind of work.

CHAIRMAN CLUFF: Yeah. Hal, at the Executive Committee meeting last night, we went through this list of some 25 possible contracts, and looked at them, and they're all worthy of funding. The problem is, we have limited funding, and your point was in one of the proposed contracts. And it's our goal to pass this information on to other funding agencies, and to try to — try to get some of this work.

And some of them are more important than others, just from the standpoint of the perishability. A number of these items, we can do three months from now or a year from now and still get the same information. So, we picked on the ones that we thought were particularly relevant to our initiatives, and URM was the very highest on our priority list.

COMMISSIONER BERNSON: Oh, no question about that.

CHAIRMAN CLUFF: Yeah.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, the second contract that —

COMMISSIONER FRATESSA: Tom, may I —

EXECUTIVE DIRECTOR TOBIN: I'm sorry.

CHAIRMAN CLUFF: Yeah.

COMMISSIONER FRATESSA: You were — I may have missed it — you're looking to this contract as an outside consultant?

EXECUTIVE DIRECTOR TOBIN: Yes.

COMMISSIONER FRATESSA: And how would you go about picking that consultant? And we have great faith in your ability to do that, but I am curious in this case, because there's a divergence of opinion out there, and we don't want somebody starting from scratch, or on one side of the spectrum.

EXECUTIVE DIRECTOR TOBIN: What we would do is talk to a number of structural engineering — structural engineers who are interested. Knowing that there are some very divergent opinions, we would certainly be trying to pick somebody who's credible and, you know, not trying to further one of the pet theories that do exist. And we would like to do a form of a competitive process, where those who are interested can make it known that they're interested, and talk about what it — how they would go about it.

We are not trying to open it up to proposals that anybody could talk about what it is that they want to do, but it's a matter of what it is that we want to have done, the data that we want to have collected and be evaluating those proposals, you know, based on their merits.

COMMISSIONER FRATESSA: I would be glad to assist you in that.

EXECUTIVE DIRECTOR TOBIN: That's good.

COMMISSIONER FRATESSA: Our firm will not be proposing, by the way, but I would be glad to assist you in that selection.

EXECUTIVE DIRECTOR TOBIN: Well, I'm glad to hear that — not that you're not proposing, but I'm glad that you'll help us, yes.

(Laughter)

COMMISSIONER FRATESSA: I get the message.

EXECUTIVE DIRECTOR TOBIN: Excuse me.

Mr. Chairman, the second proposal would be a safety assessment of damaged buildings. Now, we've heard a number of instances already in our hearings about decisions that have to be made, whether or not buildings should be red-tagged, green-tagged, or yellow-tagged, and what the meaning of that is. And as I think we've heard, there was one training course that occurred prior to the earthquake on how to do this sort of work using the methodology developed by the Applied Technology Council.

The proposal here is that one bit of information that would be lost is a very careful description and photographing of buildings that have gone through this process already, so that we would have teaching materials available to teach engineers and building officials on how to go through this process. The idea would be to select buildings that have been red-tagged, photograph the damage, describe the damage in the building and the decisions that were made, so that there will then be training materials on real buildings after a real earthquake available for those courses.

This is one that also has been proposed by a number of agencies — or as necessary by a number of agencies, and we may well be cooperating with somebody to gather this information. But, again, it's perishable because the damaged buildings are going to be repaired soon or demolished. And we feel the information to be quite useful afterwards.

CHAIRMAN CLUFF: Do you need a motion?

EXECUTIVE DIRECTOR TOBIN: I'd like to have a motion, if this is okay, and —

VICE-CHAIR RIORDAN: I would be happy to.

COMMISSIONER PEAK: I think Barbara made the motion, didn't she? I'll second it.

CHAIRMAN CLUFF: Any further discussion on the motion?

(No response)

CHAIRMAN CLUFF: All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, I don't know if this is the time when you would like to do this, but I know yesterday we spoke a little bit about the special legislative session of the legislature. And if the time is — if we have the time right now, maybe we can talk a little bit more about that.

CHAIRMAN CLUFF: Sure.

EXECUTIVE DIRECTOR TOBIN: If that's okay.

CHAIRMAN CLUFF: Go ahead.

EXECUTIVE DIRECTOR TOBIN: As you all know, shortly after the earthquake, and realizing the extent of the damage, that there were a number of calls to the governor for a special session of the legislature. This was necessary primarily because of the need for funding, and funding in some very specific categories of programs that had not been covered by the California Disaster Aid Act, and other problems that had come out that were rather unique to this earthquake.

Well, our staff participated in this, really, from the beginning. There was a meeting in the Speaker's office of Bay Area legislators, largely those in the area that had been damaged, where the format was for these legislators to describe what had happened in their districts and what the problems were. We were represented in that meeting not only by Assemblyman Cortese and Senator Alquist, but also we were invited and given a chance to speak, as the only other people who got to speak were legislators, and to describe what the problems were.

The problems, you are all familiar with, through our hearings, and they were described, and the funding needs and the concerns had been described. Clearly, very rapidly, the legislature had come to grips with the kinds of lessons that we have been observing in smaller earthquakes and foreign earthquakes, and the kinds of proposals that were coming from the legislature were very solid, very good.

We made the point that not only was it of critical and first importance to deal with the recovery of the Bay Area, but also not to forget that this has to be the first step in a hazard mitigation program that would take many more years and cost much more money.

I would say that that idea is one that was received quite favorably, even though that, after this, the leadership in the Governor's Office had discussed what the format and topics for a special session would be, and at that time, it was certainly decided that they would limit it as much as possible, at least for the first couple days, so that the legislature could deal with the immediate question at hand, the funding of the disaster recovery process.

Now, I don't think it's necessary to go into some of the details, in terms of whether a quarter-cent sales tax is going to be enough or not, or whether the funds could have been raised in another manner or not, but even though there was unanimity among the legislature, with maybe only one or two disagreeing, out of both houses, there was some signficant disagreement as to how you raise the funds.

And as such, there were politics that were involved in this issue, with one argument being that the state could recognize that these were a great loss and to put a freeze on increasing government expenditures for a short period of time, and by not spending money on other programs, especially cost-of-living raises associated with the health, welfare, and other programs, that the state could then make up the $600 million or $800 million or $900 million that was necessary, others arguing that this was clearly an extraordinary situation, and it took extraordinary measures.

The result of all of this was that 12 bills were introduced in the Assembly and 12 bills introduced in the Senate, the idea that these bills would be identical, they would go through both houses, come out identical, and it would speed the process. It could be done in a day and a half or two days.

Along with the — along with the 12 bills on each side were another 75 or so bills that came into print. And we have for you a description of each of these bills. A number of those bills were our bills, bills from previous years, bills from this last session redone, a lot of very important bills and a lot of new ideas. But, clearly, it was too much for the legislature to deal with over that period of time. And our bills, though — I think received fairly well, those that got a hearing — will not be taken up until January.

Mr. Chairman, maybe I should break at this time.

CHAIRMAN CLUFF: Yes. It's 9:30, and right on schedule we have General Baxter with us, and we'd like to welcome General Baxter to our meeting.

And we want to thank the general and the Presidio for allowing us to hold our meetings here, the one last week and today, and certainly, the fine role that the military played in not only this earthquake, but the Presidio played an important role in 1906.

I personally observed — within a few minutes after the earthquake, I was driving in parts of San Francisco, and was amazed to see the military already out, helping direct traffic in the emergency. And so, we're very pleased, and we would hope that even though this facility is being changed and its use and so forth, that the military still has a presence and will be able to help us in the disasters that are yet to come.

GENERAL BAXTER: Thank you very much, Chairman Cluff. And I'd like to wish you all a very good morning.

And on behalf of Lieutenant General William H. Harrison, who's the commander of Sixth Army and the Presidio of San Francisco, we would like to welcome you to the Presidio and hope that our facilities here are very adequate for what you want to do during the rest of the day.

When I was thinking about this this morning, I decided that you must have been very perceptive in your planning to plan this particular meeting three weeks after a major earthquake. It was kind of a good time to do it.

The earthquake surely drove home to the people in San Francisco, but I think everybody in this country, the importance of seismic safety and what it is that you people are all about.

As the chairman said, the Presidio has now survived two major earthquakes, one in 1906 and one in 1989, with relatively minor damage. We have one building down on the fill area, down near the Coast Guard station, that has two wings that are damaged pretty good, and it's going to take a million bucks or so to get that building back on line. But other than that, everything that was up on the hard rock survived very, very well.

As in 1906, about three weeks ago the Army rushed to the aid of the city. And in 1906, it said that probably the Army may have saved the city. I think that's probably a bit of an overstatement, but they played a veryu major role in maintaining law and order, providing food, clothing, and shelter for the many people that were rendered homeless during the 1906 earthquake.

If you have a chance, down behind the museum, down the road here about 300 meters, are two earthquake houses, and they're two of more than a thousand that were built during the 1906 earthquake. They're still down there preserved. They're open every day for everybody to take a look at, so if you get a chance, you might want to walk down and look at it, look at them.

On October 17th, we answered the call also. And I live right up in that house right out the window there, that I can see. And within fifteen minutes after the earthquake, I was in our emergency operations center, which is in the basement of our headquarters building, and there were people there ahead of me. But we were operational immediately, had contact with the City of San Francisco, had contact with the state, had contact with most of the military installations around the area, and we were operational within minutes after the end of the earthquake.

We had a fire engine at the Marina before any of the rest of the fire department of the City of San Francisco was there. Well, obviously, we got a lot of help, but we had the first fire truck on station down there.

We had military police involved, primarily in the Marina, but in other areas, and we really don't have a large number of military police, but most of them were on duty, so most of them were available, and they were out doing their job immediately.

And probably the thing I'm most proud of are the number of volunteers that we had, not only military people, but retired people, family members, just all kinds of folks were there, coming to us, wanting to help. In fact, one of the major problems we had throughout the first four or five days, seven to ten days of this earthquake, is we had a whole lot more resources available, people that wanted to do things, units that wanted to assist, equipment that we had already identified as being available, than we could really use, because, as you know, there's a process that goes in place, and once the real emergency is over, in order to help, it has to be validated by FEMA, the Federal Emergency Management Agency. And we had a lot of assets available that we never really got to employ.

We also took almost 500 people, 500 homeless people, onto the post, and there are still 245 of them here. We have them in three different facilities. These facilities are facilities that were temporarily vacant. We put the homeless in. We hope that down the road here fairly shortly, that the City will take back their social problem and that we won't have it out here over the long term, because we have other plans for the facilities that we're using.

The history of the Presidio of San Francisco and the City of San Francisco in this area is intertwined. We think we've always been good neighbors to the City, and I think, in this case, we showed that we were good neighbors.

A couple years ago at Army Days, we had a saying that when we were needed, we were there. And I think this is a case where the Army and the other military services played a very, very vital role in what took place on October 17th and the days subsequent to that.

I know that you people here in this room have very, very important work to deal with, and I think that what you're doing and the results will be much more receptive to the people out there now after this major earthquake. And I — on behalf of General Harrison, I wish you the very, very best in your deliberations here today and what you come up with, and I hope that your meetings are very, very successful.

And if anything that you have here in support of you from the Presidio doesn't meet your standard, then, Mr. Chairman, please contact me and we'll make sure that it does. And welcome again to the Presidio.

CHAIRMAN CLUFF: General Baxter, if you wouldn't mind taking another moment or two, there may be some general questions from some of our commissioners that they'd like to ask. Would you be willing?

GENERAL BAXTER: Sure. I'd be very happy to do that.

CHAIRMAN CLUFF: Fine.

GENERAL BAXTER: If anybody has any questions of how this thing worked and what it is the military did and our role in it, I can tell you about that.

CHAIRMAN CLUFF: Fine.

Pat?

GENERAL BAXTER: Yes, ma'am.

COMMISSIONER SNYDER: Yes. Thank you for your comments, general.

I'd like to know, in retrospect, are there any things that you would do differently next time, or lessons learned from this experience?

GENERAL BAXTER: Yes. The first day that we met, I told the staff — you know, we hadn't gone through anything quite like this before — we've gone through natural disasters like the forest fires every year that we get involved in, and a few years ago, before my time, Mount St. Helens and things like that. But the Sixth Army is the executive agent for the 12 western states for any natural disasters. And when a disaster happens, General Harrison really has the authority to task the Army, the Navy, the Air Force, the Marines, anybody in the 12 western states, for assistance.

So, shortly after we got started, I told the staff, "You guys need to start writing down how we could have done this better." And we have a session in three days where we're going to sit down around a table and talk about some of the mistakes that we probably made, some of the things that we could have done better. We call that a "hot-wash" in the military. And then we will publish an after-action review that will be distributed to the other CONUS-es, for example, the other armies, Fort Sheridan; San Antonio; Atlanta, Georgia; Fort Meade, Maryland, could have the same kind of a situation. So, we want to make sure that they have access to the things that we did well, and also the things that we might not have done so well.

So, yes, there are many things that probably we could have done better. But as I said when I was giving the presentation, our biggest problem was, we had a lot of assets. Our biggest problem is we couldn't use most of them.

CHAIRMAN CLUFF: General, is it possible that the Commission could have a copy of that report when it's completed?

GENERAL BAXTER: That would be very, very simple, sir. We will put you on the distribution list, and I'll make sure that you do get a copy of our — of our after-action report, and it will deal basically with what the military could have done better. You know, we see a lot of things that maybe some of the other agencies could have done better, but we're not going to include that in there.

CHAIRMAN CLUFF: Right. Thank you.

We are gathering a lot of data from our hearings, and this is the kind of exercise we're asking the various presenters from the various cities, and what worked, what didn't work, and what could they do better, and how can we work together to improve the whole response and recovery system. And so, that will fit nicely into our report that we will finally put together. And we —

GENERAL BAXTER: We should have it finalized within a week to ten days, two weeks.

CHAIRMAN CLUFF: Oh, great. Thank you.

Other questions? Keith?

GENERAL BAXTER: Yes, sir?

COMMISSIONER UMEMOTO: It was — it's been alluded to that we had some significant communications problems within the immediate first hour after the earthquake. And I was just wondering, in terms of the available resources that you may have had, did you have any problems in that area? And if not, do you see a possibility, in the event of the, quote-unquote, "Big One" in the Bay Area, whether there might be a possibility of shared resources there?

GENERAL BAXTER: I was very, very happy with the communications. We did lose our computers during the first few hours because we lost power on the post. We're on the same power system the City of San Francisco is. So, when the power went out, the computers kicked off, and our West computer, which we talk to the whole world on, and what we call the DARMS computer, which is our mobilization computer, they all went out.

Now, one thing we did learn is that we need a backup power source for those generators. We do have a backup power system which powered our emergency operation center, but right now it doesn't have the capability — what we had didn't have the capability of powering our computer system. So, that's one of the lessons that we have learned on this.

We did have high-frequency communications, as I mentioned, with the City of San Francisco. I could hear Dr. Werdiger talking when I walked in the door, so the high frequency worked well. The telephones were out for a very, very short period of time, and it was surprising to me that AT&T was able to get the telephones back on line as quickly as they did. So, I really saw the communications as being one of the things that worked better than I would have anticipated.

Now, if you're talking about communications down to some guy on the corner, down at the City of San Francisco, if the city had been, in fact, rubble, yes, there would have been a lot of problems. But with the magnitude of the earthquake that we had, the communications were very good. We had a helicopter from Hamilton — we keep our helicopters up the road at Hamilton Army Airfield — we had a helicopter sitting down here at Crissey Field within an hour after the earthquake took place. And within a couple of hours, we had three or four helicopters here, which, had they been needed, would have been very, very valuable assets.

Our helicopters did transport a lot of people over the last three weeks, not only our people, but the FEMA people who needed to move, the many, many congressmen and presidents and vice-presidents and everybody that have been here. We've been involved in all of that.

But I thought the communications worked probably better than I would have anticipated.

CHAIRMAN CLUFF: Tom, you had something?

EXECUTIVE DIRECTOR TOBIN: Yes.

General, yesterday in Oakland we had another hearing, and one of the matters that came up was — the City of Oakland is also facing a homeless problem as a result of the earthquake. They have gone to the Federal Emergency Management Agency asking for housing resources or access to Army facilities to put the people up and move them out of the school gymnasia where they're being kept, and they're having difficulties doing that.

They're not able to get the cooperation. Yet, here in San Francisco, the cooperation was immediate and very good and extremely helpful. What is the difference between the two problems?

GENERAL BAXTER: Well, I think the difference is, the City of San Francisco asked, and the City of Oakland did not ask.

I was — I was very surprised, over the first couple days, when Mayor Agnos and his people were in contact with us, saying, "We've got problems. We've got some homeless people we need to take care of." And I was very, very surprised that we weren't getting the same kind of queries from the City of Oakland.

We are now getting those, and I know of what you speak, because I've had people at the same kind of meetings that you're talking about.

We want to be helpful, but we would like it to be short-term help. What bothers me is I hear people talking 12 to 18 months. And we don't have facilities that are unused.

As I mentioned earlier, we do have some facilities here that we put the homeless in, but one of them is a building that we had moved people out of because we were doing some rehabbing on it and we hadn't moved them back in, so that was available. We had three buildings down by the Coast Guard station, or World War II type buildings, and they are used by our reservists when they come in for reserve meetings, and they're kind of barracks type buildings, and they worked out well for the homeless.

We moved the homeless into the Golden Gate Reserve Center, which is down on 25th Street, and we had to have them out before the reservists came back in to drill again, which happened this last weekend, and we moved them into a building called the Log Cabin, which we use for parties and things like that. It's a — it's part of our recreation service.

So, Oakland Army Base — I talked to the commander this morning, in fact, just before I came up here, and he told me that he has — and he has gone on line as saying he has the capability of handling 40 families in the Oakland area, and he also has some room for spotting some trailers, but a very limited number. And, again, this is not a long-term solution. This is something that General Larson said he thinks he can do to help them out over there.

But when he starts hearing 18 months, it bothers him, because he's got other things, other missions that he needs to use those facilities for.

CHAIRMAN CLUFF: Yes, Will?

COMMISSIONER PEAK: Would you comment on the types of individuals or units that you were able to provide, over the first, say, 24 hours in the emergency? And did you — I heard that you actually drew on units from Fort Ord. Was that correct?

GENERAL BAXTER: We alerted a number of units. The California National Guard really has the job of providing support before what I would call the federal forces do. The California National Guard alerted the headquarters of an MP brigade, which is a large organization, a medical brigade, and an engineer brigade. They got the officers and the leadership of the — or the headquarters elements of those three brigades together.

They were really never employed, because there was never really anything to use them for.

We had Fort Ord alerted. Fort Ord got some calls directly. And when you have one of these things, the commander on the ground — if I were the commander at Fort Ord, California, and people are dying in the streets, people are covered up by rubble, which can happen, I can respond to that immediately. I can send helicopters, I can send soldiers, I can send people. But there comes a time when I have to quit doing that and we have to use the FEMA process.

So, we provided soldiers here in San Francisco, MP's. We provided one of our engineer units to help start moving the rubble over at the Cypress interchange area over there. We provided a number of tents out of the California National Guard down in Salinas, or down in the Santa Cruz-Hollister area. We provided soldiers down in that area, but not large numbers. But had they been needed, had they been required, we could have provided easily thousands of soldiers to assist in this.

Now, the Navy did a lot of things too. I talk about soldiers all the time, but the sailors and the airmen were involved also, and played a very, very important role.

But we did not employ our large units. We had a brigade out of Fort Lewis alerted initially, because we thought that because we were here in San Francisco and a lot of this was happening down near Santa Cruz, that we might have to establish a headquarters down there to operate out of there, to provide assistance. It turned out that that was never required.

Any other questions?

CHAIRMAN CLUFF: Thank you very much.

GENERAL BAXTER: Once again, welcome to the Presidio, to our facility, and anything we can do to help you, we're available.

CHAIRMAN CLUFF: Thank you, sir.

Tom, you want to complete your report?

EXECUTIVE DIRECTOR TOBIN: Yes, Mr. Chairman.

I was speaking about the special session. And the two items I want to call your attention to, we passed out yesterday afternoon, that will give you a summary of the bills that were introduced, along with some of the analyses that were done on those bills, and a letter — a memo from Assemblyman Cortese's office describing the bills that passed through the legislature.

What I would like to do is to suggest that the bills that didn't go through will be up very, very soon, in January, and if the commissioners could read that list, see what's there, and it'll give you some introduction in terms of what we would expect in January.

The staff will clearly be faced with a huge, huge workload when it comes to legislation this year. It's one that we look forward to with quite a deal of excitement, because of the opportunities it will provide us. But rather than looking at a few bills, as we do every year, we'll be looking over 100 bills on earthquake safety. And I believe the legislature's going to be looking to us for some good information as they try to sort through the priorities that suddenly have to come out of the number of matters that will be before them.

Are there any questions at this stage?

COMMISSIONER BERNSON: Yeah. I'd just like to ask — I don't know what plans the Commission has relative to follow-up on the earthquake relative to CalTrans and our infrastructure, bridges, highways, freeways, and things like that. But I think one of the things that, obviously, some of us are concerned about — I know that we had the director of CalTrans before our council the week — a couple days following the quake, and learned, much to our surprise, that there are some 48 bridges, freeway connections and so forth, in Los Angeles, that are deficient.

And I think, in light of what has happened, I think that one of the things that we might want to do is prepare some information, I think, and possibly recommend some remedial work and retrofit, legislation or whatever's necessary, to correct that problem. And I think that that might be one of the things we might want to place on our agenda in the very near future.

CHAIRMAN CLUFF: That fits into our initiative that — I think it was at our meeting that we had in Los Angeles last month, where we talked about the priorities and the schedule of CalTrans, and to some extent focused on some of those issues. We didn't realize the significance of some of those until we had this spectacular collapse.

COMMISSIONER BERNSON: Well, I think it's the old saying about what is an acceptable risk.

CHAIRMAN CLUFF: Right. That's right.

COMMISSIONER BERNSON: Well, all of the sudden, an acceptable risk was not so acceptable in Oakland.

CHAIRMAN CLUFF: Yes. That's right.

EXECUTIVE DIRECTOR TOBIN: Yeah. Mr. Chairman, one of the bills that did pass included in it money for CalTrans to begin a much more aggressive retrofit program. I believe the number is about $300 million that was provided as — Keith is frowning — but it was on that order. Clearly, that's not enough to strengthen the deficient bridges within the state, and CalTrans is going to have to very rapidly come up with a mitigation program. I think that we should look at that, once they have that together, and discuss the matter.

So, we will be asking CalTrans to talk about that.

We'll have a CalTrans person here today, but I don't believe that that part of their program is within his responsibilities.

CHAIRMAN CLUFF: Hal, let me respond to one of your other questions, was "What's the Commission's involvement?" And we've already had some involvement, involved in the selection of the professionals who are — have been appointed now by the governor to make a study of the collapse, Cypress collapse in Oakland.

And in my view, that's — once that's over, then we can look at their report and see how that information factors in to the initiative we have.

And so, I think we've got to kind of stand back and wait for a while. There's a very competent group that's been appointed to make that special study, and then see where that information fits, in — whether it be Los Angeles or wherever else.

Let me just take this opportunity to compliment CalTrans. They've been really on the chopping block since the event.

I was in a helicopter the next day, and I flew over hundreds, if not thousands, of CalTrans bridges and overpasses and so forth that were performing and functioning very well. And it's unfortunate that there were some they hadn't gotten to. But by and large, their bridges performed very well.

COMMISSIONER BERNSON: Yeah.

CHAIRMAN CLUFF: And they knew about the Cypress structure.

COMMISSIONER BERNSON: Also in Whittier —

CHAIRMAN CLUFF: So, it's like a lot of our other initiatives. We've got some poor actors out there, like the URM, that we know that we've got to deal with, and this should give us some momentum to help deal with those problems.

Yes, Jim?

COMMISSIONER McMULLEN: I'd like to update the Commission on one of our discussions at the last regular meeting, which was in Los Angeles, relative to the Attorney General's opinion, the infamous 88-904 opinion, wherein the local building regulations potentially were invalid if they were more extensive than state regulations.

As a result of that, Senator Bill Campbell introduced a bill called SB 7X, which failed in its first committee, and that was to overturn that opinion and, in fact, make it state law that local entities could be more restrictive than the state law.

Yesterday, at the state Board of Fire Services, the board voted unanimously to ask the state fire marshal to either support or introduce legislation which would overturn that opinion by the Attorney General. The League of Cities is going to have a resolution at their meeting, which was postponed due to the earthquake, next month, and that resolution is coming before the League in support of that, as well as it will go to CSAC and the other organizations.

In light of the earthquake and the fact that the rebuilding is going to impact several local ordinances which are more restrictive than state regulations — there are 199 ordinances which have more restrictive building provisions than state law now — and in light of that, perhaps the Commission wishes to go on record as supporting, certainly, this legislation intent, in order to move it.

COMMISSIONER BERNSON: Jim, if I may, we discussed this a little bit at our last meeting. The City of Los Angeles is being sued by the wood shingle roof industry relative to our ordinance banning their use in the City of Los Angeles. So, I think this will be the major test case. If there isn't legislation that's changed — that will overturn the state ruling, I think the courts will do so. At least we hope they will, anyway.

CHAIRMAN CLUFF: Do you have a motion you'd like us to consider?

COMMISSIONER McMULLEN: I'd like to make a motion that the Commission go on record as supporting the legislation that is coming out, which gives local entities the authority to write regulations more restrictive than those contained in state regulations.

COMMISSIONER BERNSON: I second that.

CHAIRMAN CLUFF: Any further discussion on the motion?

COMMISSIONER PEAK: Is that a direct support for 7X?

COMMISSIONER McMULLEN: 7X is dead, Will. It died in its first committee, but there will be another piece of legislation coming out in January.

COMMISSIONER PEAK: This is to support the intent, right —

COMMISSIONER McMULLEN: Right.

COMMISSIONER PEAK: — of the legislation.

CHAIRMAN CLUFF: I think we have to be careful about just openly supporting any legislation. It's the concept that we want to get across. I think that's the nature of the motion.

All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, and this, of course, will be coming up in January, and we'll be on top of it. We will provide as many staff analyses as we possibly can to the legislature on that.

Today there's a very important meeting going on in San Jose. The League of California Cities, County Supervisors Association, has called an emergency meeting for jurisdictions that have suffered damage, where they can talk about the damage and the recovery process. And they've brought in representatives of jurisdictions that have already gone through this, in past earthquakes and disasters.

And we're being represented at that meeting this morning by Randy Pestor, who's going to help give the opening remarks. Fred Turner is on one of the discussion panels later on in the afternoon, and Tim Cronin, our staff attorney, will be covering the two sessions that deal with legal issues. And so, it's a very important meeting, and I'm glad that we'll have sort of a high-profile presence, in spite of having a Commission meeting that's about 60 miles away at the same time. But it is an important meeting to follow.

Passed out to you today is a letter I want to call your attention to, dated October 30th. We sent this to 70 or so jurisdictions in the Bay Area that had damage, providing them some information on how to deal with questions on repair of unreinforced masonry buildings, or the repair standards, providing information that the City of Los Angeles had developed after the Whittier earthquake, and trying to give them some advice.

That was, I think, very well received, and we also covered — we sent a copy to the coordination office, the joint federal-state coordination office in Mountain View. They reviewed it, we added some more information based on that, and the comment that I like the best of all was that we were the first agency to coordinate with them on something like this. And so, I'm, you know, happy to say that we're a part of that recovery process, at least in this way.

Mr. Chairman, the last item I have is one that I have sort of mixed feelings about. Mark Firestone is leaving the Commission, and I have a resolution I'd like to read to you and ask that you adopt. Mark is going on to what could well be a better job, and that's why the feelings are mixed. He'll be going to work for the Housing and Community Development. I think that that's a place where we need him. The HCD certainly has some important earthquake safety responsibilities, and having somebody who's worked with you for the last three years, I think, will be very important to our overall program.

I have a resolution, and let me — if I could read that and ask for a motion, if possible:

"Whereas Mark Firestone has served on the staff of the Seismic Safety Commission since 1986; and

"Whereas Mark Firestone has greatly assisted in achieving the Commission's objectives through his knowledge of land use planning, architecture, and related matters; and

"Whereas Mark Firestone has provided staff management and direction needed to prepare the Commission's publication, Steps to Earthquake Safety for Local Government, to assist California's jurisdictions in their seismic safety planning; and

"Whereas Mark Firestone has facilitated the work of the Commission's committees dealing with the role of architects in seismic safety matters and the improvement of seismic safety for private schools; and

"Whereas Mark Firestone's efforts have resulted in improved Commission liaison with the architectural profession and the Board of Architectural Examiners; and

"Whereas Mark Firestone has contributed materially to the Commission's successful 1989 legislative program; and

"Whereas Mark Firestone has assisted the Commission in investigating regulations pertaining to the mobile homes and mobile home foundations systems; and

"Whereas Mark Firestone has represented the Commission in working with the Office of Emergency Services and the Federal Emergency Management Agency to develop the state Hazard Mitigation Plan after the Whittier Narrows earthquake of October 1, 1987; and

"Whereas Mark Firestone has demonstrated enthusiasm and diligence in assisting members of the legislature, staffs, and other agencies, and the general public, with information about earthquake safety and the Commission programs;

"Now therefore, be it resolved that the Seismic Safety Commission extends its warm appreciation to Mark Firestone for his contribution to improve California seismic safety, and its best wishes for his success in his future career, and its hope that he will continue to represent the interests of seismic safety in his new role of implementing the California Earthquake Safety and Housing Rehabilitation Bond Act of 1988."

COMMISSIONER FRATESSA: So moved.

COMMISSIONER CRANDALL: Second.

CHAIRMAN CLUFF: Moved and seconded.

All in favor, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carries.

EXECUTIVE DIRECTOR TOBIN: Mark, I hope you're — yeah, there he is. Yeah. When I was reading this, I was thinking, "I hope Mark's in the room."

Mark, thank you very much, and we also have a card and a small gift here from the staff. And rather than forcing you to come all the way up here, I will bring it to you. It's got nice green and red Christmas colors here.

Okay. Mr. Chairman, that completes my report. A bit long. I'm sorry.

CHAIRMAN CLUFF: That's okay. Thank you very much.

The next item on the agenda is City and County of San Francisco, their unreinforced masonry program. We have Mr. Prowler here to present information to us.

This is not a new face to the commissioners. We've worked with David over the past, and it's not often that in a program and in an issue on unreinforced masonry, we have a chance to look at kind of a little test of how things performed, so we're eager to hear your progress report.

The agenda shows action. This is — no action is required here today. It's a progress report.

So, welcome, Mr. Prowler.

MR. PROWLER: Thank you very much.

I am the assistant to the City's chief administrative officer. And although that's a fairly low rank, I want to welcome you to San Francisco on behalf of the City. And although it's not as impressive as the mayor welcoming you, it is a very sincere welcome, and I'm very very happy to be here today to talk to you about our progress in implementing and complying with SB 547.

I want to talk today about our efforts to comply with the law, and also about some of the things that we've learned along the way, including lessons that we learned from the recent earthquake.

As you know, SB 547 requires that we list our unreinforced masonry buildings.

And let me tell you that I may refer to them as "UMB's," and that's — we do things a little differently in San Francisco. So, fortunately, we don't have URM's here, but unfortunately, we have UMB's here.

(Laughter)

MR. PROWLER: So, don't be confused if I call them UMB's.

We have to list them, we have to have a mitigation effort, which includes notifying the owners, and we're also required to report back to the Commission on our compliance. And I'm very pleased to have the opportunity to come here and report to you in person so that I can answer any questions and also hear any advice or suggestions that the commissioners may have to help us as we struggle toward increasing the safety of these buildings.

We have a list of at least our load-bearing unreinforced masonry buildings, and we have notified their owners. Each owner of an unreinforced masonry building has received now three letters from us in three languages, English, Chinese, and Spanish. And we gave all the owners the opportunity to let us know if they felt that they were erroneously on the list.

There was a lot of confusion. Some owners sent us back letters that said, "Hey, leave me alone; I already reinforced my parapet." Some people were confused about whether having a steel frame and masonry infill meant that they shouldn't be on the list or not.

We began listing unreinforced masonry buildings prior to the passage of SB 547. And consequently, we were already well into the process before we found out that we should have been counting and listing non-load-bearing masonry infill buildings.

We had a — our Department of Public Works had a supplemental request for $150,000 to the board of supervisors to look for those masonry infill buildings just before the earthquake, and so that supplemental sort of got lost in the shuffle. But we do hope to reintroduce that and finish listing the masonry infill buildings sometime early next year.

Once we had this list together, we identified a range of alternative approaches. I staff a task force that includes many City department representatives and some community people, and it's their job to make a recommendation to the Board of Supervisors on what our legislation should look like. And we have a very, very complex set of alternatives, and I'd like to just take a few minutes to go through them with you and let you know the range of alternatives which we're considering.

None of these are considered preferred at this time, but these were chosen to provide a menu of choices, on the one hand, to bracket the range of choices that — from doing nothing all the way up to a very rapid and stringent requirement — so, to bracket them, in part for purposes of environmental impact reporting.

Our city attorney tells us that we're required by CEQA, the California Environmental Quality Act, to do an EIR on our masonry and our unreinforced masonry building upgrade program. So, we have to bracket from the most lax to the strictest choices. And also, this is intended to provide a menu of choices for the board of supervisors and the mayor.

Our first alternative that we're looking at is just doing nothing. And CEQA requires that we look at that. That's really called the no-project alternative. And when we analyze this alternative, this is really the earthquake alternative, and this will give us the opportunity to examine and to tell people, "If we don't do anything to unreinforced masonry buildings and just wait for the marketplace to tear them down or reinforce them by itself, what happens in an earthquake?"

The second alternative is something that's very similar to Palo Alto's ordinance, where owners would be required to have engineers develop upgrade plans. They have to submit those to the City. They would become public record. But we would not require that owners do anything beyond that.

Alternative C is one which would require simply anchor bolts be added to buildings. The Planning Department hired the Center for Environmental Change at UC

Berkeley to study earthquake hazards in housing, and their recommendation was that anchor bolts may be sufficient to increase life safety, and that you would reach a point of diminishing returns beyond that. This is a subject that — it's a finding which is very controversial.

Alternative D would be the model ordinance, which is now being developed by the Structural Engineers Association of California. And I'll get back to that later.

Alternative E, which is the most stringent one, would require retroactively that all UMB owners come up to 104(f) of the Building Code level. As it is now, this is a retrofit level which owners can trigger if they add a floor of occupancy or increase the occupancy, turn a warehouse into an office building, or turn a warehouse into a restaurant or residences. Then they trigger 104(f) and have to do this upgrade. We would consider requiring everybody to come up to 104(f), just send out letters.

Each of these alternatives will be considered using different timelines and different priorities. So, we'll be analyzing whether we should address first the seismic deficiencies of residential buildings or of commercial buildings, whether we should have some sort of hazard index, which would take into account, for example, pedestrian intensity. We're very concerned about the safety of passersby, as well as the people who are inside the buildings.

So, we may want to first address those buildings which have a lot of people on the street in front of them, buildings in the Financial District or in Chinatown, for example, as opposed to warehouses south of Market.

We're looking at schedules for compliance ranging from a 5-year program to a 30-year program. And these would be rolling compliance periods. In other words, a certain number of letters would go out every month or every six months, not that we would send a letter to everybody saying, "Please fix up your building sometime in the next 30 years."

And we're looking at certain exemptions.

We don't want to just say, "Hey, fix up your building, and then come back to us and let us know that it's been done." We're also interested in offering mitigations. And so, we're looking at financing some — making financing sources available. The Mayor's Housing Task Force, for example, proposed a $50 million bond issue for the seismic retrofits of unreinforced masonry containing low-income housing.

I should say that most of UMB's here don't contain any housing at all. Three quarters of them are commercial or industrial or office. And it's very difficult to get any kind of subsidy money, I find, for nonresidential buildings. There's a great deal of concern about displacement and hardship in low-income housing, but it's very difficult to get public resources committed to owners of warehouses or stores who may be told to upgrade.

We often think that owners of nonresidential buildings have greater access to resources than owners of residential buildings, but I have not heard the owners of nonresidential buildings confirming that.

We're looking at the demolition questions. We don't want to lose our housing stock. We don't want to lose historic buildings or buildings which create job opportunities. If owners do choose to demolish rather than to retrofit, we're very interested in trying to have some sort of control over what's replaced. We may, for example, require that owners who choose to demolish residential hotels replace those buildings with housing.

We're looking at some changes to the rent law. For example, as the rent law is written now in San Francisco, any sort of capital improvements must be amortized, must be paid for by the tenants over no longer than ten years. So, an owner who refinances a building, or an owner who — or a new owner who buys a building and has a 30-year mortgage may have 30 years in which to repay the cost of the seismic retrofit.

But under our current rent law, the tenant — all of that can be passed on to the tenants within ten years. And this is a fairly simple change which could really lessen the — increasing the amortization period could really lessen the burden on tenants.

There's some question, I should say, of whether owners will be able to pass the costs on because of the market, rather than because of the rent control legislation. The rent control law may be amended to say, "Sure, you can charge $500 a month for a single room in the Tenderloin if you so choose," but that doesn't mean that anyone's going to pay for it. And so, we're not sure how much of an impact that change will have.

We're also looking at public education as part of any kind of program, so the tenants would be given the — would be educated about the fact that they live in unreinforced masonry buildings and what the consequences that — what consequences that could entail.

The CAO's office has hired the City Planning Department, in effect, to study these alternatives for us. And the studies that they're doing, which are about halfway through, to me, are very captivating, and we're learning things that are — we have a tremendous amount of information about unreinforced masonry buildings, and I want to go into that.

The goals of the studies are to predict at different levels of retrofit, under different timeframes, et cetera, how many owners would choose to — what would be the costs, how many owners would retrofit, how many would demolish, how many would convert the uses, what would be the displacement impacts, temporary and permanent, residential and commercial, and at the same time, how many lives could we hope to save, and how many injuries could we hope to prevent under each of these alternatives.

Obviously, the goal of these studies is not just so that we have some — so that we know some neat stuff, but so that we can design a program that really works.

We review sources such as the assessor's files, the Department of Public Works, Sanborn maps, the Mayor's Office of Housing — PG&E has been forthcoming with records — the tax collector, and interviews. And we know now — we have census information on who lives in these buildings, we know the rents that they're paying in residential hotels, we know their incomes, and we know the names and the types of buildings — of businesses in these unreinforced masonry buildings. We even know their last month's PG&E bills. We have real estate listings for individual buildings which are listed for sale, which tell us the whole financial structures of the ownership, so that we'll know how much give there is there. We even have listings from Chinatown, which were very difficult to obtain.

We know, obviously, the years these buildings were built, when they were last sold, how long they've been held, the numbers of stories in the story count, although our records — in some cases, we found buildings which appear to have 3- and 4-foot-high ceilings.

We know the assessed value of the land and of the buildings, the zoning, which will be very important for us to know, to figure out what owners are likely to do, even down to the level of detail of knowing what are the parking requirements, if people choose to demolish and rebuild, because in many cases, we're finding that owners who may otherwise want to demolish and rebuild their UMB's, if we sort of push them over the edge with a costly retrofit program, may be dissuaded by the parking requirements of the replacement structures, and may figure that they may as well retrofit the buildings after all.

We know the number of residential units, and we even know the numbers of bedrooms and bathrooms in those units. And we know the liquefaction risk under each of our approximately 2,000 unreinforced masonry buildings. We have a risk code.

And so, we have amassed a huge data bank of information about our unreinforced masonry buildings, which will allow us, I think, to design the appropriate program.

We've hired the engineering firm of Rutherford & Chekene to do some work for us. And what they have done is taken our approximately 2,000 unreinforced masonry buildings and prototyped them. So, now we've broken them down into 15 groups, and we know that "x" number of them are one-story, "x" numbers of them are three-story residential with commercial on the ground floor, we know that "x" number of them are theaters or other sort of public assembly buildings.

And then, for each of these 15 prototypes, under each of the retrofit levels which we are considering — bolts only, 104(f), and the SEAONC model — they will tell us the — they will give us retrofit prescriptions and tell us the likely cost per square foot — again, for each prototype under each retrofit alternative — prescribe to us the cost and the time that it would take to do the work, with and without occupants in place, with and without use of the Historic Building Code, and with and without finish work.

Then they will tell us what they think the damage estimates are for different types of seismic events, weighted for probability. And they will give us the likely percentage of structural damage, the likely down time, and the probable life loss and injury. And this will be the very crux of our decision-making process, I think. It'll allow us to really weigh the costs and benefits of these alternatives so that we'll know just how much safety we can buy, and at what cost.

Once Rutherford & Chekene began their work, we found that we had some real problems with our list, and that our list was probably pretty good for sheer numbers of buildings and their locations, but we really needed further work, we really needed to know much more about the buildings.

And so, we were — we spent a few months looking at the shapes of these buildings, whether they were regular or irregular, how many re-entrant corners they had. We had to know their heights in relation to the heights of neighboring buildings, because this is a big factor in how UMB's perform in an earthquake. A four-story unreinforced masonry building next door to a two-story building will behave very differently in an earthquake than one that's next door to one of comparable size.

We had to know their diaphragm ratios, and we had to clean up the list a little bit. We found some redundant buildings. We found there were some mansions in Pacific Heights which merely had brick garages. We found there were some bakeries in Chinatown and North Beach which had brick ovens that somehow got on the list as unreinforced masonry buildings.

We have a — we're studying about 2,007 unreinforced masonry buildings now. For your information, they contain 36,259,764 square feet. That's one way of looking at our UMB problem here. 772 of them are residential; 225 of them are office buildings; 570 are commercial; 380 of them are industrial; and 60 are theaters or churches, other assembly buildings. 317 of them are one-story, 495 are two-, and 560 of the buildings are three stories. And then after that, there's a real drop-off. There's one — there's one nine-story unreinforced masonry building. It's a tourist hotel.

One thing that interested me very much was the very high level of compliance with our parapet ordinance. Parapet bracing is maybe $80 a linear foot, and yet we found that 1,086 of them had braced their parapets, and 463 of them had not. There were some which were in process and some which had not been inspected. But I was very surprised to see the high rate of compliance with parapet reinforcement.

One question that's been very vexing for us is really, "How historic are these buildings?" And one thing we found is that there are many, many different lists of buildings which are landmarks, or Category 1 or Category 2 or Category 3, and it seems that the same building may be on three different lists, having three different statuses. And so, we were very lucky to get a small grant from the state just to look at all these lists of historic buildings, and figure out which buildings really were historic, and how historic, and what to do about it.

And so, we found that 529 of our UMB's are considered architecturally significant, and 1,478 of them are not. But we have on our list as architecturally significant, yes or no, and to me that is virtually meaningless, because I don't know who is making these judgments.

We've not only been doing a lot of computer analysis and feeding tons of information into computers, but we've also been trying to get more qualitative information. And so, we've been doing a lot of interviews and presentations, and owners just show up and tell us things, real estate people call all the time, appraisers call all the time. We're sending out a questionnaire to 500 owners, asking them about their buildings. People have been quite vocal with their opinions, as you might imagine. And I suspect that as we get closer and closer to legislation, they'll get more and more vocal.

We've had meetings with people from the real estate community, the Apartment Owners Association — I gave a presentation to them — many, many community groups and tenant groups, and even groups of, actually, UMB tenants. We've met with groups of people, both in Chinatown and in the Tenderloin and other neighborhoods, who were small groups of tenants who live in these buildings, to find out their wishes. We've met with the Landmarks Board.

We had a scoping meeting — this is what these meetings are called — for EIR purposes, where you send out a letter to anybody who may have any opinion, and say, "What are the things which you think we should be looking at in our environmental impact report?" And this was the first opportunity for owners of these buildings to really show up, and they really did. We expected about 100 people, and there were about 200 people who showed up at this meeting.

And I want to let you know some of the things which they felt we should look at.

Now, at this meeting, the first guy who stood up said, "Whose idea was this whole — whose stupid idea was this whole thing in the first place?" And before anybody could make nominations, there was this hush, this gasp that went through the room. And it appeared that the rest of the people who'd come were so appalled by this guy's bad manners that for the rest of evening, the tone of the testimony was greatly elevated, as people tried to disassociate themselves from this guy.

And so, we were very fortunate that the input that we got from owners was not just of a level of, "Leave us alone. My building withstood the last one, and don't you have anything more important to worry about?" But — there was some of that, but actually, the testimony was quite good.

Some of the things that people said that I highlighted to share with you were that we should — we should fully utilize and describe the UMB strengthening program experiences of Los Angeles and Santa Rosa. Some guy said we should estimate the past and future UMB deaths and injuries, and compare those for — compare with those for auto and airplane accidents, followed by a pro forma probability study of the chances of a person dying or being injured in a UMB in an earthquake. Someone suggested relaxation of demolition-new construction restrictions, paperwork and bureaucratic time delays. Someone said the studies should discuss the number of available, qualified expert engineers in the field of UMB upgrade, so that the limited number of such firms is considered in the development of the compliance schedule, to avoid price-gouging and poor quality work. Someone mentioned that certain businesses may be especially sensitive to the effects of dust associated with upgrading activities, such as those involved in electronics. And then someone asked if we'd consider the problems of temporary relocation of an 800-member wheelchair-accessible church.

So, we did get — we did get really good comments. Many people spoke in terms of catastrophe and disaster, but they were discussing real estate impacts. They were not discussing the impacts of an earthquake; they were saying that any kind of program that we could implement would be a catastrophe and a disaster. Someone said that this would be the death of real estate in the city, and some people just thought this was a silly idea and that it was some sort of make-work program for city planners.

But it would be interesting to check back with those people now and see — and see what they still — if they still think that way.

One guy — there was a very flashy landlord there who said that if his tenants got crushed by the building, it would be an act of God. And I suspect that his tenants would have said the same thing about him.

(Laughter)

MR. PROWLER: By and large, though, I was — in talking to the public about UMB retrofit, even before the earthquake — and as you can imagine, the earthquake has really raised awareness — I've been very struck by the willingness to help that owners have, and their interest, their concern — they understand, by and large, that this is a real problem. They would like — many of them, a very surprising number of them, would like to reinforce their buildings if we can help them do so. They don't feel, in many cases, that they have the resources to do it.

But over and over and over again, owners have said to us that they think it's a good idea, that it should be done, and that they very much want help in doing it. And that's been very, very gratifying. And they've been very forthcoming with ideas and suggestions, data, and there's been a real willingness to get involved.

Many of the owners have expressed a real sympathy with the people that have to design this program, and said, "Boy, this is a real tough one, and I don't envy you having to figure out what to do about it."

I met with one owner who owns a low-income unreinforced masonry building, low-income housing, and he said, "I think that these buildings should really be upgraded to the maximum level feasible." He said, "I had to put in sprinklers in my building, and then a few years later, the inspectors came back and said it wasn't enough sprinklers, and then came back and said, 'You need more sprinklers.'"

And he said, "If I had known at the beginning just how stringent the requirements were going to wind up being, I could have saved a lot of money in the long run by doing it all at once. And I have a fear that if you do this sort — maybe a bolts-only approach, that then you're going to come back. There will be an earthquake somewhere, and the state will require it, or you'll come back and say we have to do more. And why don't we just get it over with?"

And I said, "Well, how do you think that should be paid for?" And he said, "Well, now, you're the government. That's your job."

The goal of our program is to balance life safety, affordable housing, historic buildings, and business concerns. And in order to do so, we need a program which has a reasonable relationship between the costs and the benefits, that can pass the board of supervisors and the mayor, that can pass any kind of possible court challenge, and which is obeyed and which can practically be obeyed. And we were very cheerfully working on that simple task up until the earthquake.

And I want to talk for a few minutes about what impacts the earthquake had. I bought a flashlight, finally. That was one impact that it had.

People have always said — I would hear all the time about this work, "Gee, all you need is a little earthquake, and then it'll be so easy. All you need is just a little one to shake people up, and then you'll have a program in no time." And that earthquake did give a new urgency to our program. There's much more of a heightened interest, obviously. There's much more, I think, of a willingness to commit public resources to dealing with the problem. People have much more of a sense now that earthquakes are real events that have real impacts on real people.

Here in San Francisco, five people were killed by one unreinforced masonry building out of 2,000. And I think that really sunk in to people, that there were actual living people who then were no longer living. And I think that had a real effect on people, that real people do get hurt.

In fact, the economist on our unreinforced masonry building study team was injured in the earthquake himself, and for three weeks he was home recovering. He was hit by a plate glass window in downtown Berkeley, and had glass throughout his body.

So, it really sunk in to people that earthquakes are not just sort of interesting geologic phenomenon or things that happen elsewhere, that this is a real risk. And that, I think, really sunk in.

I was a little bit concerned, I have to tell you, that after the earthquake, people would say, "Gee, all this time you've been whining about Chinatown and the Tenderloin and the South of Market are going to fall down, and look what happened; the Marina fell down." And I was afraid that people would get a very false sense: "Look, we had an earthquake, and unreinforced masonry buildings did okay, so shut up, already." But actually, we — people did not get that impression, and I'm very happy that people do realize that although there was not widespread collapse of unreinforced masonry buildings, that they were harmed, the unreinforced masonry stock in San Francisco has been damaged, and people really realize that. They're not shrugging that off.

At the same time, though, while everybody's talking about earthquakes all the time now, while, before, that wasn't the case, I think that perhaps what has happened is that other earthquake-related concerns have come to the fore, and perhaps UMB's as a concern have gone down, in the panoply of earthquake-related concerns. Highway construction, for example, obviously is something that things are — is a thing that people are thinking about much more now, soil conditions, such as in the Marina — really, I think, had not thought about that perhaps as much as they — as much as they could have.

And so, I think that within the whole array of earthquake-related concerns, unreinforced masonry buildings may have gone down a little.

At the same time as we're feeling a new urgency to address UMB's, the earthquake set us back, not just because our economist was injured, but also because we feel a real responsibility to incorporate the lessons of this earthquake. We can't go ahead and design a program as if — as if we don't have new information. And we have new, very valuable information about how UMB's performed, whether they were retrofitted or not, about what people choose to do when they can't go back to their homes or to their business for three months, which is information which we want to know, in case — you know, to study for the retrofit impacts as well as for the impacts of an earthquake.

We have looked at most of the unreinforced masonry buildings to see how they performed, and so far, I understand 1,427 of them have been examined very carefully, here in San Francisco, and the rest of them will be examined to see, those which did not collapse, what happened to them. Were they unscathed? Is there a relationship between their height and their performance, the adjacencies, the soil conditions? What actually occurred here? And we have to — we have to know that, and we want to track the decisions that people make.

This information, obviously, is going to have broad applicability.

But earthquakes are very costly items. For example, here in San Francisco, I understand that in the week or week and a half, two weeks after the earthquake, we were paying $350,000 a day just in police overtime. And so, the City of San Francisco, which had just finished crawling out of a deficit, now is back in one. And we really don't know how — how we're going to pay for anything. And I suspect that we're going to see a wave of layoffs, and we're facing some real fiscal problems.

And although, obviously, earthquakes are something that people are very — we'd like to fund research into now, and we'd like to fund a program to fix up dangerous buildings, still, everything anybody wants to do in the City of San Francisco has taken a fiscal — a fiscal impact.

Also, the SEAONC model, which is one of our alternatives, and a very popular alternative, is totally up in the air now. The structural engineers want, of course, to incorporate findings of the earthquake, and so it's very difficult for us to study this alternative without having the alternative in front of us. We don't know what the cost implications would be of a model ordinance that is still under review. And so, that has set us back.

And, of course, everybody's been disrupted. Anybody who has any expertise in the area of structural safety, or in the area of earthquakes, has been very, very busy lately. And so, it's been very difficult to get access to the types of expertise that we've been needing.

We need to make sure that the findings can be collected and analyzed. We need staff help to make sure that we can get to legislation. And so, we feel an increased urgency, an increased public willingness, to commit resources. But unfortunately, we have tremendously pressing needs here that have been created by the earthquake, not only recovery needs, but also mitigation needs to prepare for the next one that we're having a very, very hard time addressing.

I read the status report on California's unreinforced masonry building law which was prepared for you, and I found it very, very perceptive. And I just wanted to take a second to highlight some of the things that were pointed out in the status report which I find were true for us. When I read this thing, I thought, "Boy, I should have read this thing before we began this program, this status report."

Financing the strengthening of unreinforced masonry buildings remains difficult for most owners. Lenders to not want to get involved, we find, less so now, since the earthquake. And it's very difficult to, on the one hand — it's very difficult to provide subsidized public funds for the retrofit of particularly housing, which maintains affordability — which is a big concern — we don't want to provide public funds for housing which will then not be affordable — but which do not have so many strings attached that private owners don't want anything to do with it.

I'm not sure if I explained that plainly. But when we do provide subsidized money for retrofit of UMB's, or for any kind of rehab of low-cost housing, it always has very strong rent restrictions, and private owners, by and large, are disinterested. And that's a — that's a very difficult paradox.

Experience in strengthening URM buildings has led to refinements of technical standards. And this sort of refinement is always ongoing, particularly in the wake of this recent earthquake. And we always can wait for the next refinement and the next refinement, and at some point it becomes necessary to cut it off and say, "Look, we have to go with this," or "We can't wait until there's more and more — until there are more and more technical refinements." Finally, we're going to need the code.

Compliance with the law is taking longer than many local governments anticipated. Boy, that's for sure. And legislative action is needed to provide additional incentives and assistance. And I — I really want to emphasize that.

The lack of funding incentives and other resources to initiate and support local governments is a problem. And San Francisco certainly needs help.

The lack of financial assistance and information incentives for owners is needed to be addressed. There's a potential loss of low-income housing and dislocation of tenants. The special problems of retaining the values of historic buildings need to be addressed. And there must be the selection of appropriate provisions in a mitigation program to meet the specific needs and priorities of communities.

We're taking our responsibility here to increase safety very seriously in San Francisco. As I said, we began the process prior to SB 547, and we've seen very graphically that unreinforced masonry buildings are a threat.

I'm pleased to tell you that, as I said, San Franciscans are very willing to participate, and to create a program that works, and this includes owners, residents, public officials, and it's been very gratifying to see.

I want to finish my remarks, and then I eagerly ancitipate your questions and comments, with some remarks — by quoting some remarks that Mayor Agnos made in August to the International Association of Structural Safety and Reliability. He says,

"This year I supported the expenditure of $400,000, City dollars, to survey San Francisco buildings for seismic safety and to develop a list of options. Engineers are working with housing experts, economists, and city planners to develop a long-term plan to retrofit buildings and minimize loss of life. We're preparing a list of options, weighing each type of seismic upgrade against varying magnitudes of earthquakes and the number of lives each option will save, and at what financial and social costs."

"What is unique about our approach," says the mayor, "is that we are viewing this not just as a technical problem, but as a human problem, a socioeconomic problem, if you will." He said,

"I am fond of saying that San Francisco is a family-sized city, where events in one part of the city are quickly felt throughout our neighbor-hoods. We have learned that solutions to City problems work best when we put a human face on the equation.

"As we prepare a plan of action, the Federal Emergency Management Agency and the state Seismic Safety Commission are watching carefully to see if the San Francisco model can be duplicated elsewhere. We welcome that scrutiny. In fact, we're used to it. San Francisco is often the place where model solutions to national or global problems are developed. We are a city worth watching."

And that concludes my remarks.

CHAIRMAN CLUFF: Thank you, David, for that very articulate and well presented progress report.

MR. PROWLER: Thank you.

CHAIRMAN CLUFF: I'd like to commend you on involving the owners of the URB's in this process. It's certainly enlightening to see their support and understand soem of their concerns.

As you're probably aware, one of the activities of our Commission has been to focus on the issue of acceptable risk, acceptable earthquake risk. And one of the questions I wanted to ask you — I was intrigued by the statement you just read from the Mayor, that clearly addressed part of those acceptable risk tradeoffs that we have to do, and you mentioned earlier the balance of life safety and affordable housing. And clearly, there are social issues that get into affordable housing and the homeless and the poor, and so forth.

And yesterday at our hearing in Oakland, we heard testimony from the University of California at Berkeley about some of their ways of wrestling with acceptable earthquake risk.

And so, I'd like to ask you to describe the process — and let me — let me just outline it, as we discussed it yesterday — the study that you're having done to help you better understand what the balancing parts of the equation in this balancing process that you have to go through, so one tries to understand the level of hazard that's there, and then look at the cost of mitigating that hazard.

And out of that process, there is a judgment that has to be made on what level of seismic safety one thinks ought to be achieved, and then what level can be afforded. And out of that comes, then, some level of risk. We can't have absolute safety. And I think we're making some progress to make sure the public and society understands that.

So, there's some level that we have to accept. There will be some losses. There will be, hopefully, only economic losses, but we will have some lives lost and injuries.

So, could you describe to us how you see that happening in San Francisco? Someone in some position will have to make that final judgment, or a group — is that the board of supervisors, the mayor? — who is that? And then, once that's done in advance of an earthquake, and then we have an earthquake, what's the accountability? People who are in a position to make those risk judgments have to be willing to accept the accountability of those things. And how can we balance that, because we have URB's and then we have the building stock of high-rise buildings? That's a whole different area.

And so, those judgments are going to be different, and we're going to be willing to accept various levels of risks, depending upon which part of the building stock we're looking at.

Could you describe that process for us?

MR. PROWLER: Well, it's a very difficult question. And it's hard for me to second-guess the decision-making process that our elected officials will make. I suspect, though, that to some extent, it's a function of timing. And right now, if they had a measure before them to retrofit UMB's, they'd probably go for it. And there would be a great deal of testimony.

I'd be very interested in hearing — in hearing from the elected officials.

CHAIRMAN CLUFF: Keep going. Let's finish your thing, and we'll let you respond to other question.

MR. PROWLER: I suspect that it's a matter of timing. You know, in the immediate wake of an earthquake, I suspect that seismic retrofit will be very popular. As memories fade, it may be that at that time, owners will come forward and say, "Hey, this is going to hurt me too much," or tenants will say, "Hey, this is going to displace too many people." And at that time, the elected officials may be more likely to respond to that.

CHAIRMAN CLUFF: What is the group or the individual that has that ultimate judgment what will be acceptable?

MR. PROWLER: The process that we've following is that the chief administrative officer here has been asked to make a recommendation to the board of supervisors. And he is advised by a task force, which in turn is advised by a community advisory committee. So, we are looking at this menu of choices. And after — we're waiting until these studies are completed.

It's funny — a year ago, I think people had stronger opinions than they do now — well, than they did right before the earthquake, I should say, because I think many people who, when we began the project, would come forward and say, "Don't do anything, just leave us alone," tenants groups or community groups or owners, or who would say, "Hey, fix up these buildings; they have to be fixed up, whatever the price," I think that as we drew them into the study process, many of them were more willing to hang fire and to say, "Well, let's just wait and see what the findings are. Maybe we'll agree with them, maybe we won't, maybe we'll find some we agree with, some we don't. Maybe some of our questions will be raised. Maybe we won't change our mind at all, but we'll have ammunition so that we can argue intelligently rather than viscerally."

And so, actually, what I think one purpose of these studies has had, the process of getting people involved, has been that some positions have softened, and people have decided, "Hey, I don't have to take a position now, for or against; I can wait and see what the findings are and weigh the costs and benefits with some data in front of me." And so, I think it's been very helpful for loosening up people's positions and getting them talking to each other, and giving them a framework for discussion.

CHAIRMAN CLUFF: Great. That's great. That was one of the goals that we wanted to achieve, is to surface this in a very large way, so that this process of making these judgments is clearly known, and that people get involved. And once those individuals — and I guess it's the board of supervisors — once they make those judgments, then people are going to understand and support them.

MR. PROWLER: That's right.

CHAIRMAN CLUFF: When will that study be completed?

MR. PROWLER: We're — well, it depends, because we've been put back — the more resources we can put into it now, the more time we can save later on. We're shooting now for May of next year, but it could slip. It depends on whether we can throw some more people into it, whether we can get an additional computer. It's really a function of how — and there's a question of really how much new data can we incorporate. At what point do we have to say, "Look, we're not going to learn anything more; we have to just bite the bullet and go"?

CHAIRMAN CLUFF: Yeah. There is a point where you have to stop doing studies and get something done.

MR. PROWLER: But somewhere between May and June.

CHAIRMAN CLUFF: Fine. Okay. We'd certainly appreciate receiving a copy of that —

MR. PROWLER: Oh, sure. Of course.

CHAIRMAN CLUFF: — when it's completed.

Let's open it for questions.

Hal, you —

COMMISSIONER BERSON: Yeah. I have just a — not so much a question as a couple of comments that, hopefully, might assist you in some way.

We went through this process about ten years ago. And I'll start with "What is an acceptable risk?" And what we came up with, in drafting of our ordinance in Los Angeles — what we attempted to do, number one, obviously, was the protection of life and safety. But we also wanted to put something in place that would protect the buildings, so that they would not be lost. Obviously, we had — we recognize the fact that bringing them up to full code would be tremendously expensive, and just simply not economically feasible.

So, we came up with a plan that ultimately was adopted by our city council, after going through a lot of participation with the private sector, by a way. And some of the building owners, as you said, who started out very much in opposition and "Leave us alone," who became involved in the process, later became some of our leading proponents with their industry.

But we started with what we could anticipate would be the most severe type of impact we would have, which was a 7-pointer on the Newport-Inglewood Fault. And we designed an ordinance that, hopefully, would not only prevent collapse — which the basic anchors and so forth would do —but would structurally protect these buildings following that type of an event so that they wouldn't be lost. We had over 100,000 people living in those — in some of these residential buildings.

The real problem wasn't so much the commercial. It was the residential. And the financing is going to be your major problem where your residential is concerned. And it isn't even a question of losing — of finding the financing, because you're going to find, if you have the same situation that we do, that you can't lose that level of rent availability for — which is the truly low-cost housing of our city, is basically in our URM's, or UMB's, as you call them.

And so, when we got to a certain phase of our ordinance, we found out that we were unable to enforce, other than putting people out in the street and displacing them. And this resulted in continuations of our ordinance, where extensions were given for a period of 18 months.

We still are struggling with financing for some of these buildings. But one of the things you might want to look into, that we're developing now and will be ready to go forward in about March, is an assessment bond issue that places an assessment upon these buildings. And they can be estimated on an individual basis of a building, because you're going to run into more than just seismic problems when you get into these buildings; you're going to have asbestos and other code problems.

MR. PROWLER: Right.

COMMISSIONER BERNSON: So, you need to figure those things in.

And the third and last thing that's probably bottom line, and you touched upon it a little bit, is the affordability after the work is done. And one of the ways that you might look into when you're going through this process, if you'll — if you'll look at these buildings, you'll find that most of them have many mortgages against them, because they can't get conventional financing, and every time they're sold, the owner has to take a third or fourth or fifth mortgage, whatever it may be, and most of these are at very high interest rates. Therefore, the debt service on these buildings is quite high.

So, whatever process you look at may want to look at discounting some of the existing loans, buying down some of the other loans, so that the interest rates are — could be as much as half of what they currently are. And conceivably, a program might be able to be accomplished without having the debt service increased over what it currently is.

MR. PROWLER: Um-hmm, right.

COMMISSIONER BERNSON: And therefore, the rents can be kept at a level where the people who are now in them can still afford them.

And all I can say is, you've got a lot of work ahead.

But let me just say, one of the things that — the problems that you will have in getting any type of compliance, is till an ordinance is adopted and people know what they have to do, you're not going to have any success. Once people know what they have to do, these buildings will become more valuable than they are today, because today they have little value because of the danger, and nobody knows what the cost is going to be.

MR. PROWLER: Um-hmm.

COMMISSIONER BERNSON: So, the value of these buildings will increase once your ordinance is in place —

MR. PROWLER: Right.

COMMISSIONER BERNSON: — and it will be easier to get financing.

MR. PROWLER: We have found that owners have — real estate people have said, "Look, the uncertainty is killing us, and just do something."

COMMISSIONER BERNSON: That's right, exactly.

MR. PROWLER: They really — they want to know what it is, but their first concern is that they need some level of certainty.

They've also told us that unreinforced masonry buildings are not salable now. However, we do get — we do get copies of listings of buildings that have sold, and we find that there is a price differential between UMB's and comparable reinforced buildings, equal to about the cost of retrofit.

COMMISSIONER BERNSON: One of the things that you might want to look into — and we would certainly be supportive — but also, there are certain tax benefits to people who buy these buildings and do make the retrofit.

MR. PROWLER: Um-hmm.

COMMISSIONER BERNSON: If the state and federal government were to create an incentive to people to invest in these buildings and do the work, I think you'd see a lot of private money coming forth that has not been available up to now.

MR. PROWLER: Um-hmm.

COMMISSIONER BERNSON: So, that's one of the things you might want to look at.

MR. PROWLER: Right.

CHAIRMAN CLUFF: Yeah. Could we move along? We're scheduled to go to lunch here in five minutes, and we've still got several items on the agenda.

COMMISSIONER BERNSON: Five minutes?

CHAIRMAN CLUFF: Yes.

Our agenda shows 11:00 a.m., lunch.

So, I want to — this is a very important part of our program. It's the guts of looking at a very important issue. And so, let's try to keep the comments and questions as concise as we can.

Bill?

COMMISSIONER IWAN: Just a point of clarification on your timetable for action. You have indicated to the chairman that around May, June — I think you gave that as the time when your reports would be completed?

MR. PROWLER: That's right.

COMMISSIONER IWAN: And then what is the timetable for taking some action on those reports?

MR. PROWLER: We're hoping to have a vote on an ordinance by the end of next year, to allow about six months for public debate.

COMMISSIONER IWAN: I guess the only comment I would make is that I sense a great deal of excitement and interest in the process that you're using. And I affirm that this is an excellent process. I think we always have to keep in mind that we have to be careful not to become so enamored with the process that we forget that that's pointing towards a goal. And a lot of time has passed here now, and the situation hasn't changed much, for many years.

Get that process to a conclusion as quickly as possible.

MR. PROWLER: We're trying to do that.

To tell you the truth, I have a sense that the time we spend now putting together the program is probably time we will not have to spend in court later on, and that if we go into it with well thought of, well articulated program, we won't have to spend so much time defending it after passage.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: First, I wanted to answer one of your questions, who's responsible for the URM legislation. The Seismic Safety Commission is, as well as Senator Alquist, who authored it. The first time around, it failed, in '84. The second time around, it passed, in '86. So, the City and County of San Francisco has had, since 1986, the opportunity to do all this work, not to say that I'm pointing any fingers or anything like that.

Also, in consideration of all of this, in 1983, in Coalinga, there was an earthquake. And we could say, pretty frankly, that there used to be a lot of URM's there. In 1987, we had the Whittier Narrows earthquake. And we could say URM's did not perform very well there. And now we come, in 1989, and we can say that no less than nine people died as a result of URM's, in the '89 Loma Prieta earthquake.

And in particular, for the City and County of San Francisco, the epicenter was 100 kilometers away. If it were on the Hayward Fault or further north on the San Andreas, I'm sure devastation would have been much greater in the City and County of San Francisco as well.

I think a lot of the sentiment of the Commission is we encourage what you're doing. We do want you to expedite as much as possible, as we all know, once you adopt an ordinance, where you see any flaws in it, you correct it at that time. But let's get something in place so that we can see some of the retrofitting expediting as quickly as possible.

Also, in commenting on following what Commissioner Bernson was mentioned, Senate Bill 424 just passed this past session, and that should be highlighted and, I think, the financial institutions should be informed of that fact, and also be maybe incorporated in some of your dialogue, because now they are the ones that have a financial per se guarantee on their loans on unreinforced masonry retrofitting.

And also, there are a lot of examples — the Seismic Safety Commission staff is well informed about the various ordinances throughout the state. There are models throughout the state. The City of Los Angeles has one, City of Palo Alto has another one, and I think, in terms of actually expediting matters. There are a lot of examples that you can —

COMMISSIONER BERNSON: The Commission has a model.

COMMISSIONER UMEMOTO: Oh, excuse me. That's right. The Commission has a model, itself.

CHAIRMAN CLUFF: Keith, could you shorten this and get on with it?

(Laughter)

COMMISSIONER UMEMOTO: So, anyway, again, I know not all of it is per se your responsibility, in terms of the timetable and how that was adopted. But I'd certainly encourage you to do your work as expeditiously as possible and not, again, get inundated with, "Well, let's look at the data more carefully," "The longer we wait, we'll have a big one and we'll have plenty of data to look at then."

CHAIRMAN CLUFF: Bill, could you expedite your question and comment, please?

COMMISSIONER KOCKELMAN: I've got two questions. You only have to answer the first one.

Of the 2,007 buildings, how many have been strengthened or demolished by government activity in San Francisco? How many? Five, ten, twenty?

MR. PROWLER: You mean as a result of the earthquake?

COMMISSIONER KOCKELMAN: As a result of your activities and the mayor's and the board's. In the city, how many of the 2,000 have been strengthened or demolished?

MR. PROWLER: These are all privately owned, you understand, that I was referring to.

COMMISSIONER KOCKELMAN: I understand that.

MR. PROWLER: To tell you the truth, if anything, I think the discussion of new codes coming up may have slowed it down.

COMMISSIONER KOCKELMAN: Just give me a number. Do you have a number?

MR. PROWLER: No, I don't, offhand.

COMMISSIONER KOCKELMAN: No. Second question, I've been advised that the City's consultants identified those 2,000 buildings twenty years ago. Can you tell us in writing, subsequent to the meeting, what the Commission or its staff can do to help you and your director and the mayor and the board push this along a little quicker? You could put that in writing to us.

MR. PROWLER: Thank you. Sure.

CHAIRMAN CLUFF: Any other questions?

Tom, you had one?

EXECUTIVE DIRECTOR TOBIN: David, I have one question that I'd like your opinion on. There's been a bit of pressure on the Commission to sponsor legislation that will strengthen Senate Bill 547, and particularly, one of the suggestions is that the state adopt a minimum statewide ordinance, like the structural engineers' ordinance.

How would that affect you people and your programs? So much of what you're doing is looking at what an acceptable minimum might be.

MR. PROWLER: Well, obviously, we'd prefer to have the right to have a — to design our own program which meets the local needs. I would feel more comfortable with a state-mandated model if there was more consensus in the engineering community, and I don't see that.

CHAIRMAN CLUFF: Okay. Thank you very much, David. We appreciate your coming here, and we look forward to continuing working relationships to help move this along.

MR. PROWLER: Thank you.

CHAIRMAN CLUFF: The next item is the Education Task Force report.

Ed, please make this as expeditiously as possible. We'll have that booming voice coming out of the ceiling if you don't keep on schedule.

MR. HENSLEY: Good morning. As all of you, I'm sure, have on the tip of your minds, we had a report from the Department of Education in September on the results of their action stemming from AB 3730 of last year, which required them to follow up on the Katz law that requires schools to have an earthquake emergency procedure in place.

The 3730 — the Katz law doesn't have a component — doesn't have — involve the Department of Education directly in that emergency procedure development. 3730 from that last year brought — in effect, brought the Department of Education into the process.

The report that the Commission received in September is the first stage of the Department of Education's participating in the procedure statewide of enforcing and standardizing the establishment of emergency procedures among school districts.

To summarize the recommendations in that report, it recommends six legislative — it has six legislative recommendations: one, that there be a lead state — a lead agency at the state level — it recommends that that be the Department of Education; it recommends money be appropriated to implement the Katz law; it recommends consolidation and distribution of materials related to developing such a system; it recommends expanding training programs; it recommends that the Field Act be amended to include nonstructural hazards; and it recommends that local engineers be authorized to inspect school buildings when necessary, so it can be expedited after an earthquake so that the schools can be used as shelters.

Those are the recommendations. The Department of Education was charged with just coming up with, in effect, the components of a model earthquake procedure plan for schools to follow. There's follow-up legislation after that that's in place, that was passed this last session, that would go the next step, to the actual developing of that model earthquake plan. The Department of Education has already said if there's no money in that bill, they won't do anything except clean this report up and send it out to school districts.

Well, there was no money in that bill, so this is as far as it's going to go, unless we — probably unless we do something.

I recommend that, using the fulcrum of the Department of Education's having asked us to endorse this report, and the coincidence of there having been an earthquake recently, and a lot of public attention being focused on it — even Bill's Honig's, probably — that the Commission accept the report from the Department of Education via a letter from the chairman of the Commission, that we congratulate Bill Honig and the Department of Education for the work they've done, the beginning, the good beginning that this report represents, and that we offer to work with them, specifically establishing ties that we as yet have not had, at the upper administrative levels.

So far, we've had the Department of Education's architect, whose work — probably almost individually this represents, to some extent, because he's concerned about earthquake safety — but his concern doesn't flow upstream in the Department of Education. So, I think we should offer, in that letter of acceptance of this report, our work at the upper administration level, and follow it up with staff work as much as possible to make that happen.

COMMISSIONER IWAN: I would so move, Mr. Chairman.

CHAIRMAN CLUFF: Thank you.

VICE-CHAIR RIORDAN: Second.

CHAIRMAN CLUFF: Seconded and moved.

Any further discussion?

Yes, Dan?

COMMISSIONER EBERLE: When the report was presented to us at the last Commission meeting, there were some comments made. Particularly, I was concerned about a recommendation including the role of the county Departments of Education. I would like to see in that letter some comments that came out of that discussion that we had, and particularly encouraging the county Departments of Education to get more involved and play a vital role in earthquake preparedness at the school level.

CHAIRMAN CLUFF: Any further comments?

Pat?

COMMISSIONER SNYDER: Yes, I had some comments that I had jotted on my copy of the report, and I don't have that with me today. I would ask that I be allowed to forward those to the chairman before the letter goes to the appropriate people.

CHAIRMAN CLUFF: Fine, thank you. Yes, all of the commissioners, if you have comments that you'd like to be considered in the letter that we will send, please send them in to the staff, and we'll make they're seriously considered.

So, all in favor of the motion, say "yes."

(Chorus of yeses)

CHAIRMAN CLUFF: Thought I'd trick you!

(Laughter)

CHAIRMAN CLUFF: Any opposed?

(No response)

CHAIRMAN CLUFF: No. The motion carried.

COMMISSIONER BERNSON: We have one "no."

CHAIRMAN CLUFF: You said "no."

CHAIRMAN CLUFF: No, I said "any no's." I'm sorry.

CHAIRMAN CLUFF: The next item is the role of — report on the role of architects in earthquake safety.

Stan, can we be as brief as possible on this?

COMMISSIONER SCOTT: Well, yes. I'll be very brief.

I should say, this is the second time that this report, in substantially the same form, has been before you, the previous one about six months ago, after which point several members of the committee talked, including Paul Welch. And Paul is here again today. He came down —

CHAIRMAN CLUFF: Oh, Paul, could you come up to the table, so that if —

COMMISSIONER SCOTT: Yes. I was just hoping you could — you'd give him — Paul is a quite succinct guy too, so I think we can —

CHAIRMAN CLUFF: Okay.

COMMISSIONER SCOTT: — unless there's an unacceptable risk that our lunch will be recycled before we get to it.

Just very briefly, you considered substantially this same report about six months ago. At the same time, CCAIA, the California Council of the American Institute of Architects — for the general public — they were putting it through a kind of a peer review of their own, because we were hoping to get it out, if possible, as a joint publication and with full support from CCAIA.

At that point, however, some of their legal and insurance advisors raised questions about some of the wording, some of the language that they were afraid might trigger some — some of the phraseology might trigger some interpretation that suddenly there was a new standard of care in place, and so this would make it difficult for CCAIA to support.

So, Paul and I essentially took their concerns and worked the phraseology over, tinkered with some of the words.

Our committee reviewed it. They felt that while it was softened a little bit in terminology, the basic findings and thrust and conclusion were just as strong as ever. And also, the new version was run by the legal advisors, and they said, fine, their concerns were alleviated.

So, we're back again, and I'm hoping — unless we've strung too much out in time — to actually ask for action on this. If we're too short on time, we could do it in December. But I would like — as one of his last acts, Mark Firestone prepared a motion for us, and if possible, maybe we can consider it. If not, we can do it in December.

But could we just hear a few words from Paul Welch, since the —

CHAIRMAN CLUFF: Yes.

Paul, we're pleased to have you here, and we appreciate, before you start, the fine response that the California architects gave during the emergency from this recent earthquake.

MR. WELCH: I appreciate that.

Mr. Chairman, Commission members, I wish we had more time to talk about exactly what we have been doing, and I know that's the purpose of your meeting this afternoon and elsewhere during this month. But in order to be succinct, so that you can go to lunch, let me say that I thought we had a good report to begin with, and I think now we have a better one, a better one in that I think it will be more quickly implemented by the professional associations. It has been shared with all of the design professions, members of the Architects and Engineers Conference Committee.

We took the lead as the point organization in working with our underwriters and attorneys to make sure that it was something that we could implement in a way in which the design professionals could be comfortable with, and what you see is the product of that effort.

And I should say that the California Council has begun implementing parts of the report already. We'll see more of it implemented in 1990, and the remainder in 1991. And it's now being shared with our management — program management committees to make sure that that happens. And I look forward to a time down the road where I can come back and report on how we're doing.

CHAIRMAN CLUFF: Thank you.

Stan?

COMMISSIONER SCOTT: Thank you very much. Well, because time is so short, let me simply read the motion, and if the Commission is comfortable with it, maybe we can proceed. If not, we could take it up in December.

This is the motion that Mark Firestone prepared:

"1) Adopt the committee's report as submitted;

"2) Dissolve the committee and direct staff to thank its members;

"3) Appoint Commissioner Scott to chair a new architectural committee that will work on implementing the committee's recommendation, request him to identify members and report to the Commision; and then,

"4) Direct staff to continue to explore the joint publication of the committee's report with the CCAIA and the state Board of Architectural Examiners."

I would move adoption.

COMMISSIONER IWAN: Second.

CHAIRMAN CLUFF: Any further comment?

LeRoy?

COMMISSIONER CRANDALL: As I already discussed with Commissioner Scott, I had just a few little suggestion which I'll pass on.

CHAIRMAN CLUFF: Okay.

COMMISSIONER CRANDALL: But, may I say — I think it's a very, very good piece of work, a commendable report, and one that will be of great benefit, not only to the profession, but to the public.

CHAIRMAN CLUFF: Any further comments before the question?

(No response)

CHAIRMAN CLUFF: All in favor?

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion passed.

Other committee reports. Do we have any other committee reports?

(No response)

CHAIRMAN CLUFF: Great. Thank you very much.

No, it's too late now, LeRoy.

(Laughter)

CHAIRMAN CLUFF: You have two minutes.

COMMISSIONER CRANDALL: Yes, I have less than that.

CHAIRMAN CLUFF: I knew you had one. I kept looking at you, and —

COMMISSIONER CRANDALL: Just a public apology, I think, regarding the Strong Motion Instrumentation Advisory Committee. We had scheduled meetings, and we postponed and postponed because of the activities of our members in the earthquake, but we will be meeting at the end of this month, and we will take active steps on some of the programs that are before that group at that time.

I just didn't want you to think we had gone out of existence.

CHAIRMAN CLUFF: No. We're very pleased with the progress and the fine work that this group has been doing.

COMMISSIONER CRANDALL: I mentioned yesterday that fact, and I'd like to say at this meeting that the staff of SMIP has done a commendable piece of work on getting out data, and I think that — that and the additional information will be of great value in future earthquake design considerations.

CHAIRMAN CLUFF: Okay. Any other committee reports?

(No response)

CHAIRMAN CLUFF: Are there any — I'm going to — we're not going to break for lunch now. I'm just going to go through the rest of the agenda up to the hearing.

Are there any other items that need to come before the Commission today?

Paul? No?

(No response)

CHAIRMAN CLUFF: All right.

Do I hear a motion for adjournment so we can go to lunch?

EXECUTIVE DIRECTOR TOBIN: No, we don't have to adjourn.

CHAIRMAN CLUFF: We don't have to adjourn. Sorry. We don't. I'm sorry. You're right.

Sorry. Take it back.

Recessed for lunch. Back as soon as possible. We should be able to be back here by —

VICE-CHAIR RIORDAN: Where should we be going?

COMMISSIONER IWAN: Same place we ate last time?

EXECUTIVE DIRECTOR TOBIN: No, I think that's the noise —

CHAIRMAN CLUFF: Down the hall.

Back here at twelve o'clock.

(Thereupon, the Commission recessed for lunch.)

—oOo—AFTERNOON SESSION —oOo—

CHAIRMAN CLUFF: We'd like to reconvene the Seismic Safety Commission and proceed with our hearing with regard to the Loma Prieta earthquake and proceed with our agenda that's supposed to have started a few minutes ago.

Jerry Hauke, with —

MR. HAUKE: Hauke.

CHAIRMAN CLUFF: Hauke — excuse me — chief of highway maintenance with CalTrans.

Jerry, we're glad to have you — where is he? — yeah, come on up to the table — glad to have you here. Let me just fill you in on what we're trying to accomplish in these hearings.

It's our goal to gather factual information with regard to seismic safety issues that should be under the purview of this Commission, and that we are here in a cooperative attitude. We're not here to point fingers at anyone. We're here to solicit ideas on how we can help improve the process of seismic safety decision-making and what lessons you people may have learned from this, and how we can work more closely in the future, because this was not the big event or not the close event that we're all worried about for San Francisco or Oakland.

And before you start your presentation, I'd like to repeat what I've said on several occasions throughout these hearings over the last few days. While there was the spectacular collapse at Oakland, the Cypress structure, we want to compliment CalTrans in the wonderful performance of the 99.9 percent of the rest of their facilities.

And I — the morning after the earthquake, I flew over literally hundreds, if not thousands, of your bridges and overpasses and other facilities that were performing — had performed very well.

And we certainly have learned something out of this, and it's not our focus to talk about the Cypress structure during this meeting, but to have you talk to us about what worked, what didn't work, what you do, and how we can cooperate to improve seismic safety.

MR. HAUKE: Wow! Well, let's — let me start first by saying that — and this will be the nasty part — asking us to get a BCDC permit to fix the Bay Bridge really created a lot of ill will. And I'm not sure why that had to be, but it was the wrong thing at the wrong time.

Now, with that off our collective chest, I — the first thing I did when I found out we had an earthquake is I sat down and ate, because I realized it might be a long time before you get a chance, and it proved it.

I was in Mill Valley at the time. I found it fairly easy to get in to our command post at 150 Oak Street. I always carry two batteries, two flashlights in the car, and I was really happy that was the case. I always put on a good pair of shoes, because you're going to be walking around in them for a couple of days, and some comfortable clothes, and a little food and drink. You kind of have to have an emergency bag with you.

I got to 150 Oak Street, and the power was out, and our emergency generator failed in service the week before, and we were operating on flashlights and those neat things that hang on walls and in elevators that go on when the power goes out. And we grabbed every one of those in the building, and that's how we lit our command post for the first several hours.

I was able to bring in a big generator that we use for emergency pumphouse failures, and a bunch of these little Hondas, and that gave us power and light for the first — well, actually, for the whole first day.

We had a building without any air in it, so I had the windows open, because they have them welded shut for security. Well, we got them unwelded in a big hurry. You need to deal with some creature comforts, because you pack a lot of people in a small area.

The things we did find working were the phones, incredibly. Our micros were out — our microwaves, because the dishes were tilted, but our AT&T and PT&T were working. And that's how we were able to get damage intelligence and route recovery stuff going. We did have communication by radio, but until we got our generators going, we didn't have radio at our command post.

We had three command posts, one at Cypressone at the Bay Bridge, and one at our 150 Oak Street facility in San Francisco. San Francisco kind of looked at the whole picture and provided the information to the press on what was going on everywhere, while the command post at the Bay Bridge and at the Cypress concentrated on getting the bridge open and getting the — helping out with the victims at Cypress Street.

A little bit on cellular phones. Early on, Cellular One loaned us about 80 to 100 cellular phones. It made a tremendous difference. We were running around with those. I had three in one car at one time, and they were all ringing. You just can't believe how much assistance they gave us.

Unfortunately, in civil service, cellular phones are still a political issue. We had just received 12 for the entire district of CalTrans about two weeks before, and, of course, our General Services, who feels these are toys, made sure that they had a 707 area code. So, any time you want to dial across the street, you had to dial 1-707, and a million other digits.

And you may not be aware, but when PT&T acts in emergencies, they have a — they blank out the incoming calls, so that those people in the disaster area can call out. Well, these were no use because they were — they were a 707 number. As a matter of fact, we had difficultly calling the Bay Bridge because that's across town. But the phones worked enough of the time to make the difference. And when the cellulars arrived, those little hand jobs, they were — they were amazing. I can't say enough about that.

And Cellular One gave us unlimited calls. They just turned them off this morning at ten o'clock, so my little phone is no longer working. We're picking up a couple of dozen of those to continue using.

We're still in an emergency earthquake mode. We're working seven days a week, 24 hours, around the clock. And we're going at it.

A command post. Fortunately, I had experience with Response '87 and Response '89. And Response '89, we just finished with, which was an earthquake centered on the Hayward Fault, and I was in Sacramento working on that simulation. And I want to tell you, it was just — just like that, confusion, information, not sure what's going on, power out — it's just like God was there being a simulator, throwing these things at you and you can't — you just can't believe the next one that's coming down the pike.

In fact, my adrenalin is still flowing here. But I was right at home — in fact, maybe the only one at home, because I'd been through this in simulation. I can't say enough about these exercises, whether they're on the tabletop, or whether they're a full-blown $5-million federal Response '89. They train you. And you're not uncomfortable, you're unfamiliar, you've been through it, and it's just — you get the feeling, you know, on Monday you'll turn it off and go back and it'll be a normal world.

Well, it wasn't a normal world on Monday. But the training was there. You can walk in a situation and you know what you're going to do. And our command post, there was no regard for rank. It was — you learned, you went to the experts — we had — we had all the top people in the local CalTrans — you went there, you asked them the question, they'd give you an answer, you took that answer, and you acted on it. It wasn't a lot of second-guessing. You have to trust the people you're working with. And we developed a real bond there.

I got — you know, I realized we needed security from these exercises, and we had a guard right away. You've got to keep out the tourists, you know, your own folks that want to wander in and see what's going on. We just said, "If you're not in a command post, you can't come in here." And the same thing goes with the press. You have to — it's very important you have a press organization to deal with them, but you can't have them wandering in when you've got every phone in the place going, and you're trying to save lives and get the roads opened. You have to have real tight security, and you have to have somebody, not to resist the press, but to accommodate them.

You know, we're sending up tours, we've got vans, we've got a half a dozen people doing nothing but working full-time on the press. It's important, because we find out a lot of things by turning on the TV and seeing what's happening. It's extremely valuable to see that.

You have to deal with them, the press and security, right away. And you've got to be brutal about it.

I made the mistake of letting one guy into the command post and did him a big favor. Thirty minutes later, I come in and he's still there. He wouldn't get out of there. I finally had to stand up and say, "You're leaving now," and otherwise I'd have got him arrested and hauled out. They just don't care. They're as arrogant as hell, and they're going to — they're going to do anything to get in and obstruct you.

And most of them are pretty nice, but some of them have no ethics or morals at all, and you've just got to physically throw them out. It's unfortunate, but it's true.

So, you get a command post, and you've got to protect yourself against the world. And it's a war, literally.

Well, I would say, all in all, it went extremely well at CalTrans in the command post. I'm very pleased with both the internal and external functions. Take one agency, the City of San Francisco — a lot of understanding there. We were closing down the ramps, we were closing down the Embarcadero, we were shutting down their port parking and all. They couldn't have been more helpful. And I realize they're up to their ears in alligators too, but there's still this great feeling of understanding among the various agencies, particularly here in town.

And I was able to reach people via their emergency contacts, just work your through, command post to command post, and find people and communicate with them, let them know what's going on. And it's important to do that, because they — they need that input. And you have to sometimes fight your way in to tell them, but we were successful in every case.

Well, that's a real quick rundown on how it felt at our command post.

One more point — phone numbers. You start gathering phone numbers up, and if there's one tip I'd give somebody, immediately start a phone book of your own that you never — never leaves your body, because if you start using little pieces of paper and sticking them on the walls, you just keep looking for the same number time after time. Have one little book that's got nothing but phone numbers.

And I still carry it around. I got it out of a Holiday Inn, and there it is. And every number I came across went in this little book, and it never leaves me, because you're always looking up someone's phone number. That's another thing.

We resorted to — we just got a contract with the Holiday Inn, and we put our people up there. We didn't spend a lot of time sleeping there, but at least you had a place to go, get a shower, maybe breakfast — about the only meal we were able to handle once in a while there. We had our dispatchers working 12 on and 12 off, and they were just — you just can't have them — send them home. They have to be someplace right there, where they can get some peace and quiet.

And the one thing we lacked was a place to go, just where it was quiet, and talk. It was just incessant noise, and you — as a matter of fact, one comment I remember from our district director — we were running a service across the bridge there. It was — first we were walking across the rail, which was really uncomfortable, and then they got a catwalk up. And the only peace and quiet the Burch Bachtold had for a solid week was when I was late picking him up, and he had a chance to walk about 400 yards on the bridge — there wasn't anybody within sight, and it was quiet.

And, you know, you need that. I don't know how you get it into the system, but you need someplace to just be quiet for a minute or two. And in fact, he said, "I think I'll just keep on walking to San Francisco," but I got him in the car.

Well, how about some questions? I'm just rolling out here —

CHAIRMAN CLUFF: We have a couple of moments for some questions if commissioners have questions.

VICE-CHAIR RIORDAN: I'd like to ask a question.

CHAIRMAN CLUFF: Yes, Barbara?

VICE-CHAIR RIORDAN: I don't think I understood. You are responsible for a district of CalTrans? Is that right?

MR. HAUKE: District 4 consists of the nine Bay Area counties. We run from Cloverdale in the north to Gilroy on the south, and a little further south of that. We include Santa Cruz and Monterey, and we go out to Lake Berryessa, and almost all the way to Stockton.

VICE-CHAIR RIORDAN: So, you really cover the entire area of damage.

MR. HAUKE: The whole business, right.

VICE-CHAIR RIORDAN: What was the communication like from the south, particularly, the Santa Cruz, the Watsonville, the Hollister area? Was that able to be picked up rather rapidly, or was that slow coming in to you?

MR. HAUKE: Well, all immediate attention was here.

VICE-CHAIR RIORDAN: I know.

MR. HAUKE: Now, I have a daughter living in Santa Cruz, so I was really interested in what was happening to her.

I didn't find out for three or four days, via a son who also works at CalTrans — just started in our maintenance area — he got word to me that she was all right.

Other than Highway 17, we knew very little about what was going on down there. We did know that the bridge at that one slough was down, but that — and we knew there was a good detour, and we just put that aside as not a high priority.

VICE-CHAIR RIORDAN: Is that a bridge of yours, or is it another —

MR. HAUKE: Yes. It's a — it's on Highway 1. It's Strough Slough. It's near Watsonville, and it's a fairly new bridge, but it went down completely, and it's still down. And we're going to have an emergency contract to be out there shortly to put a new structure up.

It's of great concern to the Watsonville area, because people are having to detour around it, but there is a good detour, at least in CalTrans' definition of a good detour. There is one there.

VICE-CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Further questions? Bill?

COMMISSIONER WASTE: This is for my own education as much as anything, but where do you draw the line between CalTrans responsibility and city responsibility and county responsibility and so on? As we drive the highways and byways, they all look the same. But obviously, you have a different responsibility. How do you cooperate with the cities and counties in a case like this also?

MR. HAUKE: Well, among the cities' and counties' public works departments, it's pretty clear where there's a state highway and where there's a city or county street. And it's signed that way, which is clear to us people that know what the signs mean. But there's not too much confusion on that.

Now, in the City of San Francisco, we did close off areas underneath our structures which are technically city streets, or, in the case of the Embarcadero, the Port Authority. We just went in and closed them and then told them why we were doing it. And it was important that we do it as quickly as possible, and there isn't — there really wasn't any argument over it.

In the more rural areas, it's clear Highway 1 is Highway 1. That's a state highway. Where they run through towns like Santa Cruz, it's still pretty clearly defined.

If we can't get there and there's a need, we can usually count on the locals to give us a hand, and vice versa. We're broken into six highway regions within District 4, and each highway has quite a bit of autonomy in terms of their dealings with the locals. And they'll act on their own. That's the only way you can do it in an emergency. They'll act until they hear from us, as best they can. And we don't draw some real hard lines. If there's a need for a road opening, we'll share our equipment and manpower if we've got them there.

And, in fact, our maintenance guys live — because of the cost of living, they live so far away, they're coming into San Francisco from Fairfield and Sebastopol and Windsor, north of Santa Rosa. We tell them to go to the local — the closest maintenance, state maintenance station, and work out of there until they can get further instructions. So, if they're in Santa Cruz, they'll stay in Santa Cruz and do what they can there, on their own, until we can get to them.

CHAIRMAN CLUFF: Further questions?

COMMISSIONER SNYDER: Yeah.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Thank you for your report.

I was curious — the plans that you had in place prior to this earthquake, how did they work, just in, you know, on a scale of 1 to 10? Did you feel that your disaster plan was effective, or are there modifications that you would make now?

MR. HAUKE: I'd say it was pretty effective. In fact, I was surprised at how well it worked. Even those people — say, a new employee that hasn't gotten all the initial training, they just simply went to a CalTrans maintenance station and asked — asked what they could do. And our people at the supervisory and managerial level, they acted very rapidly. They were — they were on the road and in their cars and rolling, to see what they could do.

And that's — and I'm speaking primarily of our maintenance forces. That's the nature of our maintenance work. We've been through a number of emergencies in the last several years, and I like to consider us the shock troops. We're there first, and that's kind of second-nature to us.

In terms of our management, when I walked into 150 Oak, the district director was already there, and several deputies. And that was our emergency command center, and they were there. That was the first thing they did.

And I — after being through several exercises and seeing how — the things that can go wrong, I'm very proud of the way the thing worked, you know.

COMMISSIONER SNYDER: Again, that triggered one other question. What are your responsibilities in something like the 880 collapse, and how does that dovetail with the local rescue efforts and command and control and who's in charge?

MR. HAUKE: In the — in the case of 880, there was a — there was a command post set up by the local agencies, and it was — there's a very — when you have deaths, there's a very clear line of responsibility. The coroner is in there calling the shots on any of the victims. Then you have the local fire department, and you also have the local police. And CalTrans is about third or fourth there.

We're out there to direct — we rent the equipment. We had, in no time at all, 50 different service contract for equipment rental, and we just brought them in and have them stood by. But it's — where there are possibilities of survivors, our role is to get the structure shored up so it was fairly safe for the people going in, and then wait for directions. So, it was a — it's a slow process. If there's any — you know, the dogs go in and identify if there's possibilities, and there's paint marks on the thing, but we were third or fourth in line.

Now, where there was no — no possibility of victims and so on, then we're there first, and we're shoring and tearing down and what's necessary. And that — that phase just finished, I think, yesterday. They recovered the last vehicle and the last possibility of there being a victim there.

And it's a slow process, and it's not understood by relatives, and it's not very well understood by the press, who were out there sometimes creating problems because this victim's car is eighth in line and think it ought to be first. Well, from just a pure safety standpoint, you can't do things first all the time. You have to make sure it's safe for the people in there.

So, we have to respond. And there's this incident response system that is in effect, developed by the fire people primarily, and being adapted more and more by all the other safety and law enforcement agencies. And it's pretty clear who's in charge, and you just have to wait.

I think it worked pretty well over there. In fact, it worked quite well.

CHAIRMAN CLUFF: We need to move on.

Jerry, thank you very much for coming, and we look forward to further cooperation between the Commission and CalTrans in resolving seismic safety issues.

The next part of the program is a presentation by the United States Geological Survey. Dr. Peter Ward is here. Peter is known to many of us. I've known Peter for many years. He works in Menlo Park, and the USGS was the source of much of the information that we have already had.

Peter, I've been getting faxes from your office to my fax machine, and so we've been passing it on secondhand. And we really appreciate the fine work that the Survey's been doing and the rapidity with which we've been able to have access to information.

So, we'd like to hear firsthand now what happened, what worked, what didn't work, and how the Seismic Safety Commission can work even better with the Survey to increase our seismic safety in the State of California.

DR. WARD: Well, thank you, Lloyd.

I think the good news from this earthquake is that the number of deaths were limited to 66 people, and the financial damage was limited to something on the order of $7 billion. That's not very good news to the relatives of those involved and friends, but it is good news when we put it in perspective. For example, the magnitude 7.1 earthquake in Armenia last December killed 25,000 people. So, we've come a long way in California in terms of reducing earthquake hazards.

The bad news, however, is that there was substantial damage in Oakland and San Francisco, which were 65 miles from the epicenter, the earthquake occurring in the Santa Cruz Mountains, east of Santa Cruz. And as we look at the potential of earthquakes in the future, there is a 50 percent chance that we're going to have an earthquake of the same size a lot closer to home, either on the Hayward Fault or on the San Francisco Peninsula segment of the San Andreas Fault, within the next thirty years.

So, I think this earthquake serves as a gentle reminder. And it's certainly not gentle to those having major financial loss at the moment, but I think it is — it's very important, particularly for people on the Commission and those in leadership roles, to realize that we were pretty lucky with this one. It could have been a lot closer to home.

Now, there are many, many studies underway, of the earthquake and of aftershocks, and we're learning a lot from these studies. There's a lot of new information that's going to be coming out. There will be a special session at the American Geophysical Union meeting in December. There are a number — there's a circular that'll be out in early December of the preliminary scientific information, and so on.

But I think, putting aside the work that's underway, which really is going to take a little more time to mature before we have the results, we can say, on a first order level, looking at this earthquake, that there were no major surprises, that the fact that this earthquake occurred and the damage that occurred from it was not any major surprise to people working in the field of earthquakes.

Now, I think it was about a year ago that Al Lind addressed this Commission on the question of probabilities of future earthquakes in California. And there's a report that I believe probably all of you have or have seen that was put together by a committee, of which one member was Lloyd Cluff, where they tried to codify in a fairly simple manner the information that earth scientists have been gathering for a long time, realizing that earthquakes occur in particular places, that they tend to fill in gaps with time, and that there does tend to be some recurrence of these earthquakes with time.

And I think these probability studies, this first report, was a very important step forward, because it helps us focus on which areas in California are the ones that we really should worry about first. What is the possibility? And this particular earthquake, the Loma Prieta earthquake, it was suggested in this report that there was a 30 percent chance of this earthquake occurring within the next thirty years, starting from the time of the report a couple of years ago.

But this report also suggests that there's a 20 percent chance that an earthquake of about the same magnitude will occur further north, on the San Francisco Peninsula, and similarly, that there may be two earthquakes on the Hayward Fault, both of this size, that could occur with about 20 percent probability in the next thirty years. And these, all three of these earthquakes, would be significantly closer to centers of population.

And one of the things we have to look carefully at, the damage from this earthquake, again repeating that it was 65 miles away from San Francisco and Oakland, where much of the damage occurred — and damage does tend to decrease with distance — we have to be seriously concerned about what the future holds.

Now, I think the probability approach is something that we're beginning to understand better, both as scientists and as lay people, and how to react to it. We get it on the weather reports. And I think it is a reasonable statement of the state of the art at the moment. When we say there's a 20 percent probability, that's the best that can be estimated at this point. In fact, it may be a much higher probability, but we can't define it that way yet.

Now, I understand that this committee is going to be getting together very soon to look over this information in light of the results from this earthquake, and see whether any changes are appropriate.

So, anyway, the probability approach allows us to focus on the areas of potentially greatest risk. And while we may not be able to forecast an earthquake yet, or at least predict an earthquake, we can forecast in general where the earthquakes will occur, and we're certainly working on the hope that we'll be able to improve that forecast, and perhaps ultimately make it a prediction as time goes on.

But we can forecast the damage likely from any of these earthquakes, with a fair amount of reliability.

The Marina was an area in 1906 that shook severely. It was a lagoon, but around the edge of the lagoon there was major ground-shaking. And on the intensity map of the 1906 earthquake, published in 1908, it's shown as one of the areas of greatest shaking within the City of San Francisco. The potential of liquefaction in the Marina was well known, because of it being artificial fill. Much of it's sand and, now we're learning, a lot of debris, bricks, mortar, glass, charred wood.

The Cypress structure, the part of it that failed, was on soft ground that had been designated as more likely to have greater shaking during a major earthquake, whereas the part to the south, which did not fail, was on firmer soil, where it was suggested that the amount of shaking would be less than the part to the north.

In Santa Cruz, the shopping center, which had major devastation, was on a riverbed that had liquefied in 1906. There were plenty — there were maps that showed this as a major area of potential liquefaction and high shaking.

Similarly, in Watsonville, maps had been published that showed the potential of major liquefaction in areas in Watsonville.

So, a lot's been learned, and a lot is known. And we can, at least in a general way, forecast what the damage is likely to be by region, at least from a geologic point of view, and then that needs to be coupled by people with knowledge of structures, as to what damage might actually occur.

But what do we do about it? I think a very poignant example comes from the Marina. As I say, in 1906, this was an area of very heavy shaking. But then San Francisco, in its effort to show that it could rise from the ashes, filled the Marina, filled the lagoon, with all kinds of artificial fill and hydraulically filled it with sand, in order to have an exhibition in 1915 to show that San Francisco could recover from the earthquake. And if we believe what the archivist of the library in San Francisco is telling us, there was a concerted effort in the years following 1906 to deny that there had been a major tragedy, and to get on with life and prove to the world that we could go ahead.

But the effect of this is that our generation is left with a very serious problem, some very expensive real estate — a lot of people lost a lot of money, a potential hazard which, in future earthquakes, could be very difficult to deal with. What do we do with it? It's a tough situation. And I think it's one of the examples of how nonaction, or perhaps negative action, can leave future generations with some very, very big problems.

Now, given that there is — has been a great deal of development in our knowledge of predicting the — or forecasting the effects of earthquakes, I think it's time to re-evaluate the special study zone legislation, the Alquist-Priolo Act. At the time that that was put together, it was recognized that major damage would come from shaking, liquefaction, landsliding, and so on, but it was not clear how to codify that, how to draw lines on maps. But it was clear to say, "This is a fault zone, and that's potentially damaging."

So, the — that legislation designates a special study zone as a place which has been given by the California Division of Mines and Geology as where faulting is likely to occur. And what that says is, depending on the type of development to be done there, certain studies should be done in order to make sure that development is done properly.

Now, as we look at the Loma Prieta earthquake and we see that the major damage was much more related to ground shaking and to ground failure in the populated areas, instead of to ground breaking or faulting in the Santa Cruz Mountains, I think it's important that we ask ourselves whether maybe the biggest lesson from this earthquake is that we should plow ahead with trying to figure a way of specifying special study zones that relate to areas of particularly potentially damaging ground situations.

And I really ask the question that's written on this handout that everybody has: "Is it not time that we expand this concept of special study zones to cover not only faulting, but also ground conditions such as amplification of shaking and the potential for liquefaction and landsliding?"

In the last twenty years, there's been a great deal of work done, some very detailed work in San Mateo County, and a study by the USGS in conjunction with the county as a prototype study to show what could be done, and many other studies by all different organizations.

We really have the techniques, and I think this earthquake has verified that these techniques are really pretty good. What we haven't had is the impetus to — or there hasn't really been a leadership role, say from a state position, of trying to get these techniques into practical legislation that can be involved in the development of our community.

Now, there are a few problems that need to be addressed, that we have to decide on how we're going to define the lines that are going to be drawn on the map, and how we compare, for example, dangerous soil in Northern California with Southern California, for a statewide issue. But I'd like to suggest that we have the ability. You know, if we sit down and roll up our sleeves, this is something which is — which is quite within our possibilities within the next few years. And I think that maybe the Seismic Safety Commission is the ideal forum to pursue this, to be an advocate for this role, and see whether appropriate state legislation can be put together.

Thank you.

CHAIRMAN CLUFF: Thank you, Peter.

Before I open it for questions, I was part of the committee that was the former group, the joint legislative group, prior to the formation of the Seismic Safety Commission, that helped enact the Alquist-Priolo ordinance that — for fault zones. And at that time, we did spend a lot of time debating whether or not to include these other aspects. And I would certainly, from a personal point of view, agree that it is time that we take a look at that.

And it won't be easy, but it's certainly one that is a — is a way of identifying where special studies need to be considered in order to overcome the problem. That doesn't mean that you completely avoid the area. It's a matter of understanding it.

So, this is an activity that our Commission certainly can address and get involved in.

So, let's ask for questions.

Paul?

COMMISSIONER FRATESSA: I thought that remark was very interesting.

One of the things that is important — I'm a structural engineer, so we use a zoning map — and in zoning maps, those basically are the intensity of shaking at a site, given more or less uniform seismic activity, and that's modified by a soil factor. And that allows us to design a building. And that, basically, is a statement of the intensity with which our building will be shaken.

And what I think I heard you say — but I would like to clarify it — is that liquefaction shouldn't be built into that formula, but should be a special zone in which liquefaction itself has to be addressed.

DR. WARD: Yeah, I think there's little question that liquefaction and other kinds of ground failure, like landsliding, is a complicating factor, certainly, over what can be taken into account just in terms of shaking. Clearly, whether liquefaction occurs or not is going to be an effect of how hard it shook. There were many areas of artificial fill in the Bay Area that did not liquefy during this earthquake, which, with a greater earthquake or one closer by, may be more dangerous.

But anyway, in terms of the structural equations you're talking about, it seems reasonable to me that liquefaction is another issue which — I mean, if the ground liquefies underneath, and if the building doesn't have adequate foundations for that, then it doesn't really matter how well the building is building.

COMMISSIONER FRATESSA: The point that I want to be sure of is that if we don't — are you proposing we change our zoning maps, or — for seismic — you know, for the zone factor, or would it be satisfactory to let them remain, but require a special study in certain blocked-out areas where liquefaction could occur? A special study, actually, would require a special foundation design and a special criteria for the building.

DR. WARD: I think the exact nature of the special study zones is something that really needs to be discussed by a fairly broad group. Clearly, special studies related to liquefaction and special studies related to landsliding would — might be required in certain areas, but not in other areas.

As far as factors in terms of shaking, again, I think it's a question of how big a structure we're talking about. Many people build single-family homes in areas of fairly major shaking without realizing that that's a possibility, whereas, when you're building a large structure, the people involved have had a fair amount of experience with those questions.

Anyway, I think what the special study zone — however it would be defined, could be extended to include some of these hazards appropriately, and that the effect of that would be to alert landowners and developers and so on that there are problems here, and they may be required to deal with them in certain ways, or they may just be informed that this is a problem that they need to think about.

CHAIRMAN CLUFF: LeRoy?

COMMISSIONER CRANDALL: I appreciate your remarks very much. As a geotechnical consultant, why, we're involved in this sort of thing.

But a little bit of reassurance: at least in Southern California, the seismic safety elements that are required of the municipalities and the counties do include areas subject to liquefaction. We even have areas where landslide is a potential hazard. I don't know whether that's happening up in the Bay Area or not. I would assume that the law would include that in those areas.

But in response to Mr. Fratessa, I think the answer is just exactly what the Alquist-Priolo requires, a special study be made to determine the facts. You know, when you map these things, they're broad areas, and you include areas that may not specifically be involved in the actual event. In other words, liquefaction in the area where I live, Marina del Rey, is shown as including the whole doggone territory, but there are parts of that — and I hope I'm on one of them in the structure in which I live — where this is not liable to occur.

And the other thing is that there are ways and means of overcoming this problem in your foundation construction and design. But we certainly think these are excellent thoughts, and more thought needs to be given to them in the future.

DR. WARD: I think one interesting thing that's come out of the studies in the Marina — and this gets into the question of appropriate foundations — the understanding was that bedrock there was at a depth of, say, 20 feet. And so, our group decided to drill down to put some instruments on bedrock, in order to get more quiet recordings of some of the aftershocks. Well, they drilled 264 feet through the upper and lower bay mud before they reached bedrock.

CHAIRMAN CLUFF: Peter, when was this?

DR. WARD: This was recently.

CHAIRMAN CLUFF: I mean, after the earthquake?

DR. WARD: Yes.

CHAIRMAN CLUFF: Yeah.

DR. WARD: It was during studying the aftershocks.

So, first of all, there's obviously some gap in knowledge in there, but also, I think it tends to underscore some of the issues, in terms of developing appropriate foundations in that kind of an environment.

COMMISSIONER CRANDALL: Could I ask —

CHAIRMAN CLUFF: Yes, go ahead.

COMMISSIONER CRANDALL: — quickly one other thing?

On the data sheet that you have, the sketch, you give the fault slip values. Up till now, it's been my understanding that this was subterranean slip and did not show to this extent on the surface. Now, has that been changed?

DR. WARD: No. This is subterranean slip.

COMMISSIONER CRANDALL: Subterranean slip, because then this may be a little misleading, if somebody sees it, that the fault slip was 6 feet horizontal, 4 feet vertical, and they expect that this happened at the surface.

CHAIRMAN CLUFF: LeRoy, it doesn't say "surface."

COMMISSIONER CRANDALL: I know, but who — you would assume that. Anybody who reads that who were not — knew the background would think that was at the top. I would, at least.

EXECUTIVE DIRECTOR TOBIN: I think it's a valid point. We'll change it to "fault slip at depth."

CHAIRMAN CLUFF: Yeah, right.

Thank you very much, Peter. We appreciate your coming here and keeping your remarks very short, and we look forward to continuing working relationships to improve seismic safety for California.

DR. WARD: Thanks a lot.

CHAIRMAN CLUFF: The next presentation is by John Wallett, Director of Facilities, Mount Zion Hospital.

Mr. Wallett is here.

Again, we'd like you to be succinct and to the point, to tell us about what worked, what didn't work, and how we as a Commission can improve the process and the results to improve seismic safety.

MR. WALLETT: Fine. I have some notes here, and I'll just briefly go through them.

After the earthquake, PG&E power failed. All emergency generators picked up the loads within 10 seconds, as designed. PG&E power was restored at 2:45 a.m. The space performed well. We had no telephones throughout the hospital.

The main earthquake gas valve was tripped. As a result, we lost steam pressure. PG&E arrived at 7:45 p.m. and turned the gas supply off. A different crew arrived at 12:30 a.m. and made necessary inspections and turned the gas back on. We, in turn, reset the earthquake valve and proceeded to relight the boiler on low fire. By 7:00 a.m., full pressure was achieved and was put on automatic.

Due to the severity of the quake, we did not switch to oil. This phase needs improvement in procedures and response from PG&E. A representative has been contacted.

All elevators shut down. For your information, we have — most of our floors are seven-story structures. Some controls failed. By 10:55 p.m., the elevators were turned back on by the company. This phase needs improvement in procedures and recommendations from the elevator consultants. They have been contacted.

Basically, it was a problem in that ther were so many people — it happened at the end of the day for us. Our evening shift had started, and the office people and administrators had left, or were leaving. I was standing in front of the hospital when this happened. We found that our procedure manuals — most of the employees knew what to do, and we had a large amount of people that came back to help. It was incredible, the amount of support that we had from the community, our hospital employees and such.

The problem that we came up with was, our hospital has a psychiatric clinic, outpatient type thing, called the Crisis Clinic. We have a lot of people in the area that are in halfway houses. These people were traumatized by this event, and our Social Services Department was overwhelmed with trying to calm these people down.

We also had problems in that the hospital literally functioned on its own. We had to have a fire-brigade type thing, taking food up seven-story structures, and it became somewhat difficult for the staff, although no one complained. It was an amazing event, in that people were willing to stay, even after three or four o'clock in the morning, to help.

Nurses came in. That was a real problem, because a lot of our nurses live in areas outside of the city. Because of no telephone, we had no way of notifying people. Our communications were very, very limited. As a matter of fact, the only way that we found out what was really happening was through the media, television — battery-powered — and radios were our only means of communication.

Help me out here. I don't know what else to tell you.

CHAIRMAN CLUFF: That's okay. Maybe you'd like to respond to some questions.

MR. WALLETT: Sure. That would be easier.

CHAIRMAN CLUFF: Okay.

LeRoy?

COMMISSIONER CRANDALL: Was there any structural damage in your facility?

MR. WALLETT: Yes, there was. I had to close a building this past week, an old building, our nursing school building, which dates back to 1912. It was an administrative building, and seismically, it's been considered not that safe. So, we've evacuated about 200 people out of the building and relocated them to other areas of the hospital.

COMMISSIONER CRANDALL: You're not back in it, though.

MR. WALLETT: No. We're not going back in it, at this point.

COMMISSIONER CRANDALL: And you're not going to.

Where is the hospital? I'm from out of town.

MR. WALLETT: It's on Divisadero.

COMMISSIONER CRANDALL: Where?

MR. WALLETT: Divisadero Street, between Sutter, Post, and Scott, about —

COMMISSIONER CRANDALL: It's on the hill?

MR. WALLETT: No, it's not on a hill.

COMMISSIONER CRANDALL: In the flat —

MR. WALLETT: It's one block off of Geary, if you're familiar with Geary Boulevard. It's on basically flat ground, yes.

COMMISSIONER CRANDALL: Yeah.

CHAIRMAN CLUFF: LeRoy, it's in a fairly geologic and soil condition kind of site. It's not bedrock, and it's not bay mud. It's somewhere in between. But it's a — what we'd call a good, stiff soil site, so —

Pat?

COMMISSIONER SNYDER: Yes. I'd like to ask, did you have any difficulties with any of the staff who were on duty, needing to go home and check on their families? Did this become an issue?

MR. WALLETT: Actually not. Like I said earlier, it was incredible, the amount of response that we got, positive response. People, of course, were very concerned, but because they knew the telephones were gone, and basically, after it was all over, people then, when we got phone service, started phoning for people in the Marina area, or people would come in, and we found some of them could not go home. We made provisions for people to stay at the hospital. Anyone could stay at the hospital, actually, that worked there, if they wanted to, after working so long.

But it was very, very interesting.

CHAIRMAN CLUFF: Mr. Wallett, I'd like to get your views on a sensitive issue that we've been facing. And yesterday we came up against a problem of judgments about seismic safety and what level of risk we're willing to accept. And let me use your hospital as an example.

You've already told us that you have one building that was old and that you had looked at, and prior to the earthquake you must have gone through some process to evaluate that. And it sounds like someone, either consciously or unconsciously, made a decision that it was okay for people to occupy that building.

Now, given the earthquake occurred, do you recognize that that was a very vulnerable building, and so your immediate response was to decide that was unsafe? That's what it sounds like you did. So, you evacuated the building.

Could you describe to us how you go through that process and make those judgments?

MR. WALLETT: Well, basically, the structure itself is real — I don't want to make it sound like it's totally unsafe; it's not — it's just that, because of its age — and the outside of the building is brick, and we found that large bricks were falling out of the building, so we've cordoned off basically the whole street in that area — the inside, the plaster started falling off the walls on the outside structure of the building on the inside part, near the windows, and it became unsafe that way.

We had engineers review the building for safety. The first report was fine, saying that they could return back. Employees were very hesitant to return to the building, quite a few of them, after going through the trauma of the earthquake and then going back to a building that was very old, for San Francisco. Then the engineer reviewed it again and said that he had been thinking about it, and he said, basically, it's not totally unsafe, but it's questionable at this point.

So, I mean, we are now in the process of having engineers go through it again. And for safety for staff, we've basically closed that off. No patients are in that building whatsoever. So, that's what we've done.

CHAIRMAN CLUFF: Yeah. I recognize — and we need to distinguish between safety, as we talk about the earthquake that occurred on the 17th of October — it's obvious it didn't collapse, so, from that perspective it is safe, even though there's some —

MR. WALLETT: You're talking future?

CHAIRMAN CLUFF: I'm talking about, given an earthquake on the San Andreas, 5 miles away, or on the Hayward Fault, 10 or 15 miles away, what is your judgment about the safety of that building, given those earthquakes? That's what I'm talking about.

MR. WALLETT: Not good.

CHAIRMAN CLUFF: Okay. Well, "not good" to the point where you would allow people to go in or not?

MR. WALLETT: No.

CHAIRMAN CLUFF: You would not allow people, given that threat.

MR. WALLETT: No.

CHAIRMAN CLUFF: So, it sounds —

MR. WALLETT: That's why we closed it, actually.

CHAIRMAN CLUFF: Okay. So, it sounds like you've made a decision to keep people out, and that you're going to correct the problem, either — in some way, either strengthening the building or removing it or rebuilding it.

MR. WALLETT: More than likely, removing.

CHAIRMAN CLUFF: Okay. Removing and rebuilding.

Stan?

COMMISSIONER SCOTT: I'd just like to ask if you have any buildings that were constructed under the Hospital Act that was passed after the San Fernando — one or two years after the San Fernando earthquake. And if you do, do you have any thoughts and comments about the added seismic requirements under that Act?

MR. WALLETT: Yes, we do. We have one building.

COMMISSIONER SCOTT: One building.

MR. WALLETT: Yes. And it held up very well. I think that it's a very good idea for all these seismic regulations, for this area, after going through this. And for the protection of patients and the community during a disaster, they come to hospitals, basically, for shelter, for food, and most people don't realize that the hospital becomes a very integral part of this whole system.

We become a home for some people. We became a home for people for three or four days.

Yes, I do. I think they're a very good idea.

CHAIRMAN CLUFF: Paul?

Oh, you didn't.

Okay. Dan?

COMMISSIONER EBERLE: Mr. Wallett, this may not be a fair question to ask you, but do you happen to know if the hospital has any mutual aid agreements with other hospitals or other medical agencies?

MR. WALLETT: Mutual aid?

COMMISSIONER EBERLE: Mutual aid assistance, mutual aid assistance agreements.

MR. WALLETT: Financially or supportwise?

COMMISSIONER EBERLE: Support for medical mutual aid.

MR. WALLETT: Actually, other hospitals did call us. We have a West Bay Conference of Hospitals that has been very helpful. We've done a lot on our own, basically, to gather information and to put things together. And, yes, we've had — Presbyterian, for instance, offered us some engineering help with engineers. We only had two engineers on at that time. One was in the boiler room, and by law, they have to stay there.

They did offer to send somebody over.

Other than that, I don't know if there's any written agreement or anything.

It's sort of a word-of-mouth type thing.

COMMISSIONER EBERLE: All right. Thank you.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: Mr. Wallett, you raised a question for us that's been controversial for a number of years, and that's the automatic earthquake gas valves. It's the first time we've heard of that in this earthquake, and so I wanted to ask you a bit about it.

You have a gas valve, I take it, that tripped and cut off your gas supplies.

MR. WALLETT: Yes.

EXECUTIVE DIRECTOR TOBIN: That in turn led to the boilers coming down and the loss of steam. And that also, then, restricted what you could do in the hospital or not?

MR. WALLETT: Exactly. We went on divert. We weren't able to take patients at this time because — until we could figure out what we would have to do. And with the damaged structure to most of the buildings, we were unable to accept any more patients. That affects surgery and other areas in the hospital, of course.

EXECUTIVE DIRECTOR TOBIN: And then, when PG&E checked it, did they find that there was damage, or were they able, then, just to restore the gas?

MR. WALLETT: They restored it.

EXECUTIVE DIRECTOR TOBIN: And so it —

MR. WALLETT: There was no damage.

EXECUTIVE DIRECTOR TOBIN: — it tripped unnecessarily, in terms of protecting you from a gas leak.

MR. WALLETT: As I understand it, they're set for — actually, it was tripped because of the tremor itself. They're sort of set for that. And because it was such a large tremor, it set everything off. I mean, our elevators went down, and just — I think they're set for 5. But that was a problem.

But our main problem with that — and I'd like to address this for a moment — is that it took so long to get someone from PG&E out here to the hospital to do anything. That could have caused a problem, not just for our hospital, for other hospitals, if that is a continued problem. The same thing with the elevator service.

EXECUTIVE DIRECTOR TOBIN: It's interesting, because the marketing techniques of the people who make the gas valves have been focusing on hospitals and commercial institutions and schools. And these are just the kinds of facilities that we need after the earthquake, and you can't require or expect PG&E to respond much quicker. I mean, they had your gas back on within ten or eleven hours.

MR. WALLETT: Right. But the problem that most people don't realize is that we have potential for emergency type surgeries and things like that, and we just felt that if it had been worse — and also, other hospitals in the area — I can speak from a meeting that I went to not too long ago — feel the same thing. The response was somewhat slow on that. We realize there were other situations out there, but because we have to do emergency — quote, unquote — type procedures on patients, and that there is the availability or the potential of having a lot of people coming in there for this type of thing, that we felt that the response was a little slow.

Of course, there were no lights out on the street or anything else, and all the traffic lights were down, so it was a nightmare that way also, and that could have delayed some of the things.

CHAIRMAN CLUFF: Are you considering removing the automatic gas valve? It doesn't sound like it really helped.

MR. WALLETT: No.

CHAIRMAN CLUFF: You're not.

MR. WALLETT: It helped, in that it turned — basically, it turned itself off.

CHAIRMAN CLUFF: But what value is that?

MR. WALLETT: So that we didn't have the potential of more of a leak.

CHAIRMAN CLUFF: But if you didn't have any damage, there wouldn't be a leak. So, as demonstrated, there were no leaks, so it was inappropriate to shut it off.

MR. WALLETT: But we can't say that. It automatically did that for us, but the potential was still there.

CHAIRMAN CLUFF: Only if there's damage.

MR. WALLETT: Well, we don't know if there will be damage, so it's set up to do that. Like the elevators all go down to the first floor and turn themselves off, because we don't want someone caught in there.

CHAIRMAN CLUFF: Well, we have the benefit of hearing a lot of testimony pro and con on automatic shut-off valves, so it's —

MR. WALLETT: Well, I'm not an authority on gas, so —

EXECUTIVE DIRECTOR TOBIN: But in the Whittier earthquake — the reason why we're sort of primed to it, in the Whittier earthquake, there were many of these that turned off without — again, without having a gas leak. And as a result, there was a long time for people to restore their service. And there's a question as to whether or not they're of any value, or the proper technique would be to go and smell and search for the gas leak ahead of time —

MR. WALLETT: Right.

EXECUTIVE DIRECTOR TOBIN: — and then turn it off if necessary, because it compounds the problems.

The hospitals obviously — you need that support right away from the utilities, but a person might lose their gas in a residential area and not have it turned on for months as a result. And —

MR. WALLETT: Well, I had mine turned off at my home for three days.

EXECUTIVE DIRECTOR TOBIN: Yeah.

MR. WALLETT: But I could live that. But I think maybe the hospital would prefer to have that, because there are so many buildings - and at this time, we're limited to two engineers, two people that knew somewhat of the things that they were to look for — and maybe because that would save lives, time, or whatever, to have it automatically go off.

CHAIRMAN CLUFF: Well, the testimony that we've had before from the proponents of — the gas companies in Southern California from the Whittier was that by automatically shutting off the gas, it increased the risk to life safety. And you can understand how that happened, in that in your case, that certainly — you had a — you may have had some life-threatening things where you needed the gas, so shutting it off actually compounded the problem.

In Southern California, by shutting off the gas and then not get rapid enough relighting service, people choose to relight them themselves, and so we experience fires that — so, you increase the risk by having automatic shut-off valves, according to those people who have testified before.

It's a real issue that certainly, on the face of it, looks like that's a simple solution, but as it turns out, it may not be, and it's an item that we will be debating in future meetings. But we were interested in your experience of that.

Keith?

COMMISSIONER UMEMOTO: On an operational standpoint, what percentage was your hospital down at any given time, and what were the reasons for each percentage of operation being down? Like, you were alluding to the utilities, gas, electricity. Were there any other —

MR. WALLETT: Telephone.

COMMISSIONER UMEMOTO: Telephone?

MR. WALLETT: Yeah. I'd say —

COMMISSIONER UMEMOTO: And then, in terms of being able to provide emergency services soon thereafter, what was kind of the progression of your ability to handle additional patients or patients that might need service?

MR. WALLETT: We went off divert about six hours later, so we could take patients. We were — we were always able to take care of what we had, including surgery patients. We could still do that. It was just taking patients from the community, for instance, and —

COMMISSIONER UMEMOTO: So, your existing caseload, basically, you could handle, but —

MR. WALLETT: Was — right. We did not discharge patients. We did not triage any of our patients. They were fine.

CHAIRMAN CLUFF: Thank you very much. We appreciate your coming here and sharing your ideas and experience of the earthquake.

MR. WALLETT: Thank you. Good luck.

CHAIRMAN CLUFF: Thank you.

Paul, did you want to —

COMMISSIONER FRATESSA: Before the next speaker — I know we're running late, but we ran late this morning, and I really didn't get a chance to bring something up to the Commission, and I think it's — we ought to get it done while we still have a quorum on the Commission.

The speaker just raised the same issue, and it has to do with the testimony we received yesterday. I've been thinking about it, and I think the Commission might well want to take a — some sort of a stand. It had to do with the testimony presented by the University of California with regard to the occupying of a building which has a "very poor" rating based on the University seismic safety policy.

We questioned the individual, Mr. Cross, and they were determined that they were going to occupy that building, and that bothers me, because the nature of the risk that is clearly stated in their policy. And my concern was that — are the people entering such a building well informed of what the engineering opinion is on the risk that would be — they would be subjected to if they entered one of those buildings?

Well, I've been spending the last weeks posting buildings that have been damaged by the earthquake. And on the way over here, I thought that maybe it would be appropriate that, in fact, if the University was going to occupy buildings which have a "very poor" seismic rating, that it might be, therefore, appropriate that they post those buildings, so that the people either occupying the building or entering those buildings would be aware of what the seismic risk really is.

And it's — as we heard yesterday, there is a potential risk to life in a building rated "very poor."

My proposal to the Commission would be that we write a letter to the University — not just Berkeley, but the system — and basically urge them to do that posting, in the strongest possible terms, of buildings which are rated "very poor" on their campus.

I would suggest that perhaps, if you are in agreement with this, that we draft that letter, make it available to the universities, and actually act on the letter next month. However, that's open for your consideration, because I am concerned that those buildings — a building with a "very poor" rating — is going to be occupied.

CHAIRMAN CLUFF: Is there a second to the motion?

COMMISSIONER WASTE: Second.

CHAIRMAN CLUFF: Paul, let me make sure I'm clear about your motion.

Based on the testimony given by Mr. Cross yesterday, he very clearly pointed out that they felt that they had made a value judgment about the level of risk that they were willing to accept on certain buildings at Berkeley. And as he clearly testified to us, that was a value judgment that he and others at the University of California at Berkeley had made, and they were fully willing to make that judgment based on the information they had, and were willing to be accountable for whatever consequences might result from that.

So, what you'd like to do is to make sure, with this motion, that that same information is given to people that might be coming up to the building, so they can independently make that value judgment for themselves, rather than involuntarily going into what perhaps might be a dangerous building.

COMMISSIONER FRATESSA: That's correct.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: May I just ask Paul, what would the posting say? Would it say, "This building has a 'very poor' rating," or "This building is potentially unsafe"? Maybe I'm getting into terminology prematurely.

COMMISSIONER FRATESSA: No, I think it's a good question. I think the building — the posting should say, "This building has been rated as 'very poor' as per the seismic safety policy of the University of California," and a copy of that policy is available, and it states what the meaning "very poor" is, or that could be listed right on the posting itself.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: I think that that speaks for itself, because the — in the testimony that was given, they gave us the rating system they're using and the level of risk which they're willing to accept. And really, all you've got to do is translate that and put it on the side of the building. I think that would accomplish it, really. You don't have to invent anything new. They've done it already.

I think probably, Lloyd, as far as the rest of the discussion is concerned — everybody knows my feelings on this subject from yesterday — I'm very much in favor of it. I think that somewhere along the line, there is an unacceptable level of risk, and I think that one is past it.

COMMISSIONER SNYDER: Mr. Chairman?

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Would this be limited to the Berkeley campus only, or to the entire University of California system?

CHAIRMAN CLUFF: My understanding of the intent of the motion is that we would send this to the University systems, both the University of California and the State University system, as a generic statement of something that we recommend they consider, of posting those. It's still their decision. If they want to choose to not do it, we're on record, in advising them in our capacity of advising on seismic safety to do that.

Bill — or, Barbara?

VICE-CHAIR RIORDAN: I think this is an opportunity to use our attorney. And my thought would be that perhaps he should be used to draft the letter. I think there are certain things we want to be cautious about, and yet drive the point home. And so, I would ask that perhaps that your motion include a review by our now-counsel.

COMMISSIONER FRATESSA: I'll put it in.

VICE-CHAIR RIORDAN: Okay.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: I think it's a great idea, of course. And I think you may have to say something else on the warning sign, because to students, "very poor" doesn't mean a lot to them. They get grades, and they rate cafeteria food, and so forth. I think you've got to come down and say, "The building may collapse in the next earthquake," because that's — you're really telling a child what might happen, you know.

CHAIRMAN CLUFF: LeRoy?

COMMISSIONER CRANDALL: I have a little bit of unease about this, with regard to all the other buildings in the State of California that may be in even worse condition than the universities. Are we going to be criticized for not posting all the San Francisco UBM's or UMB's, or whatever they are called, in the same manner? Maybe it's something that the counsel —

VICE-CHAIR RIORDAN: That's why, LeRoy, I think the attorney ought to write the letter.

COMMISSIOINER CRANDALL: Yeah. I think that certainly should be in.

Well, I think the suggestion that Paul made was that the letter be drafted, and then we review it before it's ever sent. Is that correct, Paul?

COMMISSIONER FRATESSA: Yeah. I'd like it to be acted on at the next Commission meeting.

COMMISSIONER CRANDALL: Yeah, right, and have a chance to know what we are going to say before we act on it.

COMMISSIONER FRATESSA: Yeah.

CHAIRMAN CLUFF: The purpose of bringing this up today was to respond to the very stimulating discussion we had yesterday, and it's continued in some parts today, and then introduce it to the Commission for our consideration. In the meantime, we would draft this up, have it thoroughly reviewed — not written by an attorney, in my opinion — I think we as a Commission will write the letter. We'll make sure we get his input to make sure that we're doing what we think covers all the legalities. But we will write the letter.

And we might want to consider this being a general policy that might apply — I agree with LeRoy — the state office buildings, unreinforced masonry, and other collapse hazard structures — there are thousands of them — this might be a policy that would apply to all of them.

So, I — we need to think that through.

COMMISSIONER FRATESSA: The one thing you've got to realize about the University buildings, they are rated. They have been reviewed by an engineer, and they are at this time on notice as being rated. They're not potentially hazardous buildings; they've been rated as "very poor."

CHAIRMAN CLUFF: The one thing that I want to make sure — the press is here — that we're not — while this is a criticism of some individuals at some locations, we have been working very effectively with the University of California and the other state university systems, and I would hate to see this get in the way of future cooperation.

And as I said the other day, we've had discussions, and Tom and I, not too long ago, met with President David Gardner, and he personally is fully committed to doing what he can. And so, I would want this to be in light of him and others using this as an opportunity to move ahead with getting the funds that are required to replace or upgrade those buildings.

So, we're not taking action today to actually post any buildings. Acting on the motion today would start the process, and we would take the action at the next meeting in Sacramento.

Tom, you had a point to make?

EXECUTIVE DIRECTOR TOBIN: Well, just a brief matter.

This idea came up during the special session of the legislature, and one of our bills that was carried by Senator Alquist that would cause a review of important buildings on a periodic basis was gutted in the Senate Housing Committee. And instead, a provision was added that would require all buildings of certain types to be posted. And the only way you could get the posting down was to have it properly reviewed and evaluated, and only those buildings found not to be hazardous would be unposted.

And the bill didn't go very far, but I guess I'd say this was very much of a spontaneous reaction on the part of an important committee in the state Senate, that there is concern about addressing buildings that are hazardous in earthquakes. All-around notice is one of the ideas that's being considered seriously.

CHAIRMAN CLUFF: Keith, very quickly.

EXECUTIVE DIRECTOR TOBIN: And that wasn't our action, by the way. It was —

COMMISSIONER UMEMOTO: Yeah. It was a recommendation by Senator Leroy Greene of Sacramento. But I think we may want to look at that, that bill, as a potential vehicle, because it's — well, certainly germane to this issue, and look at maybe the definition of high-occupancy building in reference to which buildings we set priority in terms of posting as well.

One of the concerns that was raised about the bill itself was incorporation of public facilities. I guess it's probably easier for the state to pretty much dictate what the state buildings are rated. As it refers to local government structures and school districts, it becomes more difficult because of the cost that may be incurred by it. But I think the Commission should be considering that vehicle if we do want to expedite matters legislatively.

We may want to just take the informal route at this time, but just in case we feel that the informal route is not running as smoothly as we would hope, that vehicle is there.

CHAIRMAN CLUFF: Thank you. I think we're ready for the question.

All in favor, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: The motion carried.

The next presentation is Bruce Egnew, with the Archdiocese of San Francisco. This brings up a topic of schools and other public assembly buildings that's controlled by the non-state or private schools.

And we worked with the Archdiocese in the past, and we're happy to have you here today to tell us what you've learned and what we can do to work together.

MR. EGNEW: Thank you.

I was asked to present to you some of the problems we encountered, solutions we had, and how we generally reacted to the earthquake, and how things might have gone better, or perhaps worse.

I should tell you, first of all, the Archdiocese of San Francisco operates 108 Catholic churches in Marin, San Francisco, and San Mateo Counties, 85 elementary and high schools. We have a number of extended daycare before- and after-school programs.

I cannot speak for San Jose, Oakland, or Monterey. Those are separate dioceses.

I think the entire analysis from our point of view is absolutely unique, because the earthquake happened on a Tuesday at five o'clock. And I would be reacting completely differently had it been a Sunday at ten a.m., or a Wednesday at one p.m., because, for the most part, our churches and schools were empty at five p.m.

I think also I would react differently had this been in the middle of winter, instead of on a fair-weather day, or if it had been in summertime, when everything is pretty much closed up on school campuses.

We had done a lot of retrofitting of our churches before the earthquake, and so we did not sustain the extent of damage that one might think we would. Our churches experienced an absolute rain of plaster inside from the ceilings, particularly the more decorative and elaborate churches in San Francisco. We had virtually no damage of anything in Marin County.

Had that plaster come down when the churches were full on a Sunday, we would have had numerous people with cuts and bruises and that type of thing. I did see one example of a large piece of plaster that came from a high ceiling, landed on the top back edge of a solid oak pew, and split that piece of oak like it was a razor blade on paper. And that was probably the potentially most frightening thing I saw.

We have very little damage in the way of broken or fallen over statues, stained glass windows, or candles. We were particularly concerned about candles, because of the danger for fire. As many of you know, candles burn 24 hours a day in most churches. However, we also don't have gas sources in the areas of the churches where the candles are. They tend to be — candles tend to be towards the front and the back, and the gas tends to be in other buildings or in fairly remote areas.

We still have four churches which are closed, not because of the damage, but because we can't get structural engineers in to complete their reports to us and get contractors in to begin shoring up or tightening up, or whatever they need to do to complete the work. It's mostly cracks in towers that we think are superficial, but we don't want to take the chance. In some cases, we've closed off the tower entry areas so that people have to use side entrances. And that's a minor inconvenience.

I'd say that because we're a church, we respond pretty well to revelations, and this week we're in a very responsive mood.

(Laughter)

MR. EGNEW: I think the best preparation we had was what I call the "basket of tricks." One of our assistant superintendents has worked with BAREPP in the last several years, and she's assembled a basket that she goes out onto to the road to the various schools, and she takes with her a wrench — "This is for shutting off your gas" — and a mylar blanket — "This is for an injury," and "This is plumbers tape for your water heater." And she goes through this show of tricks. That saved us — I just can't tell you how much, because so many things that we had have been bolted to wires or wired down, or in some way attached. And it was a very, very effective way to prepare, for us.

Our schools do a lot of earthquake drills and fire drills. That, I think, would have paid off had this happened during the school day, but because it was five o'clock, the only way we know is from our extended daycare centers.

In one of the daycare centers, when the earthquake began, the director of the daycare center told the children, "This is an earthquake; get under the table." And one of the little girls stood there and wouldn't move, a small child. She said, "Under the table; this is an earthquake." And the little girl said, "This isn't an earthquake." And the teacher looked at her, and the girl said, "If this was an earthquake, the principal would have rung the bells."

So, we've trained our children what to do in an earthquake, but we haven't trained them what an earthquake is. They don't have that sense of immediate response.

In a car, they know, when you hit the brakes, they grab onto something. But in an earthquake, we — the kids don't have that experience. So, I think maybe we need to do some work teaching children more what the — what the sensation of an earthquake is, or what to look for if you sense movement — look at something that may swing.

The other thing that we have become concerned about that we were not before concerned about was the apparent superiority of sheetrock over lath and plaster or wire and plaster construction. Where we have had sheetrock, we have had remarkably little damage, hairline surface cracks.

But we had one school that was plaster over wire, and the wire was — in the walls was stretched and held in place between the ceiling and the floor without any stud, metal stud or wood stud in the middle. And so, those walls were like blankets in the wind, and they moved, to the point that even with the aftershocks several days later, the walls became further deteriorated. And when they broke with the ceiling and the floor, the wire stayed in place, but you could physically push the wall in and out a couple of feet, with the danger that if enough force was generated, it could break and come down.

We ended up tearing out most of the interior walls in that school and putting up metal stud walls with sheetrock. The engineers told us we did not sheetrock for shear, but we needed it just to keep those walls from being movable and pliable.

We think we've learned the lesson that our facilities would not make good shelters in the event of an earthquake, because, if we have a school filled with kids, or a church filled with people, they're pretty much at their physical capacity at that point.

One of our high schools learned after the earthquake that they had been designated as an earthquake or a disaster shelter facility, and they said you couldn't even get into that high school if it happened during a school day. The parking lot is already filled with faculty and students' cars. The classrooms are filled. They're already basically at capacity with restroom space and that type of thing.

So, we're questioning whether we are as suitable as one might think for that type of disaster response, although, if it was during the summertime, it would be great, no problem.

Part of the reason we also felt prepared was the AHERA program for asbestos inspection. We had been through all of our school buildings with a fine-tooth comb in the course of the last year and a half, finding every conceivable space, opening every door, looking the buildings over, and in the course of doing that, looking for asbestos, we found other things, particularly in boiler rooms, that deserved attention. And so, it — that seemed to pay off for us.

We had tightened up or removed or reglued loose ceiling tiles. We had strapped down water heaters. We had done a lot of repairing and plumbing repairs to our boiler systems, in connection with the asbestos. But that certainly paid great dividends in the earthquake.

We did have two asbestos fiber release episodes because of the earthquake. In one case, a pipe broke. It sprayed water onto an asbestos area. We could not get a plumber to turn off the water until we could get an asbestos contractor to clean up the asbestos. And that's a chicken-and-egg situation. That presented us with some problems.

Our immediate response was to have our own people go to our churches and schools and inspect. The earthquake was on Tuesday. Some of our schools were open the next morning. Some were told not to open for a day. We were concerned about getting churches opened for weddings on Saturday and for masses on Sunday. So, fortunately, our staff resides in the three different counties, and each of us grabbed the county we were in, and we headed out the next morning and began inspections. And that was our initial response.

In doing that, we found a benefit that we did not know we had, a resource we did not know we had, and that was the San Francisco Fire Department. They got there as fast as we did to start inspections, to make sure that our fire alarm and life safety systems were working, and that — with the problem, of course, with power, that kept a lot of things closed off. But they were very, very helpful. They were responsive, quick, and efficient, and gave us a lot of confidence that if we — if we felt a school was habitable, and they also felt it was habitable, we felt a double protection.

Our number one problem was communications. We couldn't get to our staff members and to each other to find out what was happening. The people in Marin and San Mateo did have television and power. I live in Marin. I could see what was happening in San Francisco better than the people who live in San Francisco. But when I tried to call the superintendent of schools, who lives in San Francisco, to see what was happening, I just simply couldn't reach her, and I didn't reach her for several days.

We had trouble determining how to announce which schools were open or closed. We relied on the public school system, which had said that no schools would open on Wednesday, and therefore, we did not open any Wednesday, with the exception of Marin. And they didn't seem to notice the earthquake, and life was normal by eight o'clock Wednesday morning in our schools there.

Our response to that problem is that we would like to design an automatic trigger response and announce to our 85 schools a formula to respond to any future earthquakes. For example, if there is an earthquake of over "x" magnitude within "y" miles — if the epicenter's within "y" miles of your school, then your response is "a," "b," "c," or "d."

For example, if there is an earthquake with more than a 5.0 magnitude, the epicenter of which is more than 50 miles from your school, you may reopen the next day. If it is less than 50 miles of your school, you may not reopen until you have an inspection, or until you get clearance from the central office.

But we're trying to find some formula, some ways that we can tell people in advance how they should react, because there's no way we can talk to them while it's happening. The communications were just simply impossible.

The power problem was also difficult. We are not, by law, allowed to operate a school unless we have water and electricity, and so that kept some of our schools closed for a few days.

So, that, in summary, is the way we reacted. If there's any questions I can answer for you, I'd be happy to.

CHAIRMAN CLUFF: As you probably are aware, we have a committee that deals with schools and one that's dealing with the sector that works with the private schools and other public buildings. And we're very appreciative of the cooperation we've been getting from you and other of the archdioceses throughout the California.

Maybe there are some questions.

Pat?

COMMISSIONER SNYDER: I wanted to thank you for the report, and this is the first testimony I believe we've heard that validates the experience of earthquake preparedness that you have practiced in your schools. I know that the San Francisco Archdiocese has been very aggressive in earthquake preparedness measures. And I live in Southern California, so the word has spread that far.

The question I would like to ask, since I know that only a handful of public schools, and probably a handful of private schools throughout the state, have done the same kind of educational and school earthquake preparedness measures, was this at great expense, minimal expense, or practically no expense to the Archdiocese to do these earthquake educational procedures?

MR. EGNEW: No, it's really at minimal expense, because the — what I call the "bag of tricks" is not an expensive bag of tricks. It's things that parents react very well to in a parent-teacher meeting, because it's a — it's knick-knacky stuff, it's cheap, it's hardware store stuff. It's not like buying a seismograph or a special microscope or something.

In terms of staff time, it's minimal, because school staffs come together automatically for in-service training, before school starts in September, and then during the school year. And so, it's — maybe somewhere along the line, they may have missed some lectures on the latest techniques to teach math, but they got — they got something just as valuable.

No, the dollar outlay was minimal. The expensive outlay is retrofitting, but the education piece is petty cash.

CHAIRMAN CLUFF: Further — yes, Bill?

COMMISSIONER WASTE: Once again, we hear the magic word "communications." You've had a lot of company from that part of the program on that word.

I'm hearing another word, too, often enough that I think we should address some attention to it, and that's "power," which raises the questions in my mind as to on-site backup generating capacity, whether you have it or don't have it. Or if you don't have it, would you now consider it? And if so, at what level? Obviously, you can't put a big enough machine in the basement to pack the whole load for an indefinite period of time, but is this a viable consideration?

MR. EGNEW: We've talked about having generator capacity in our pastoral center, our headquarters building, because that would have allowed us to get back and up in giving direction a little bit sooner.

I would be open to backup generators in high schools, because they're large enough and have sophisticated enough maintenance staffs that people are aware of how to use that equipment. I would not want generators in elementary schools, because the faculty and maintenance staff is not generally attuned to working that kind of equipment, and it could end up being more dangerous.

The worst thing that happens in a school, I think, is that the kids have to spend some time there, because they can't get home at night. So, maybe they sit in the dark overnight. That's not the end of the world. But if you triggered an explosion from a malfunctioning generator or something like that, you could create a worse problem.

CHAIRMAN CLUFF: We need to move on.

Thank you very much for your presentation.

And the next presentation is Richard J. Evans, director of the San Francisco Department of Public Works.

Mr. Evans, you can come up to the table. Since you haven't been able or had time to listen to some of the other presentations, other than just now, let me tell you that we had a very fruitful discussion with David Prowler this morning with regard to the unreinforced masonry building that the City has. The Commission has been working in a very cooperative fashion with the City, and we're very pleased with the emergency response and recovery that the City is going through.

But the purpose of this, having you come here today, is to share with the Commission things you learned, what worked, what didn't work, and how we can work together to move on and use this as an incentive to accomplish the roadblocks that we've had in the past, not just with San Francisco, but all of our cities.

MR. EVANS: Thank you. It's an interesting time, because we're doing a lot of these critiques at the same time, and every one I go to, I hear about backup power, lack of communications.

The backup power is not only necessary for the buildings, but for your telephone systems. Most of them require 110 voltage to operate, and if you don't have that backup power, even just for a bare telephone system, you're really out of luck with communicating with the rest of the world.

One of my employees went home — excuse me — fired up his own generator, and set up his own off-site command post to call people in, because he was able to get his own phone system powered up, his own home phone system.

I think some of that — some of those activities we had in our department in San Francisco enabled us to be, I think, quite successful in responding to the event that occurred.

The first problem we had was with the EOC itself, the emergency operating center itself. It's in a — it's in a two-story concrete block house, which the fire department uses as a central control for fire department operations. It functions on two floors. It doesn't have very good ventilation. It's a very tight place.

We're working now on the redesign of it, and because of what happened, we've stopped our redesign to go back and rethink it, because, in my — in my opinion, I think that an emergency operation center is like an educational facility. It's where you exchange information, where you gather and exchange information, and develop ways of using the information. It's a management tool. And in any good disaster, if you have a good management team running it, you can run your disaster. It's possible to do it.

And the center we have doesn't lend itself to that, and so that's one design — one thing that we learned that we're going to benefit from.

Now, we have a program called Operation Bulldozer with the contractors in the state. We didn't implement Operation Bulldozer because the size of the event didn't require any of that type of action. The only portion of the volunteer services we activated was the bringing in of several hundred engineers from Bechtel and many other jurisdictions throughout the state, Los Angeles, Whittier, Sacramento, all over the state, that helped us on our inspections. And as a matter of fact, we've inspected over 12,000 different buildings. Many inspections we've done four or five times to update them as conditions change.

But the implementation and operation of Operation Bulldozer is one that concerns me, because there are legal roadblocks that build themselves into this. How do we hold somebody harmless, and how do they hold us harmless, and how do we defend each other in the cases of libelous action later on? So, that has not been the easiest thing in the world to implement.

One of the problems I have is, right now, dealing with those buildings which have been designated as unsafe to enter, and the demolition process, trying to preserve those buildings which have national landmark or historical status. And you'll probably see in the paper tomorrow morning where we have a little article where that issue was discussed with regard to one building in San Francisco.

Initially, in dealing with the severely damaged buildings, we discussed each building with the Department of City Planning to make sure, a) it wasn't a landmark — these were buildings that you had a few minutes that you could spend some time in thinking about. We hired two private engineering firms to come in and do independent studies of those buildings, to give us a separate — each firm to give us a separate report on those buildings.

I have the authority, under the charter of the city, to, in the event of a life safety or endangerment to adjacent property condition, of ordering a demolition. We've done this — we've used this sparingly, but it has, in a couple of occasions, caused some problems with buildings that are landmark status.

This has to be something that — as we develop our process, has to be able to be dealt with quicker. We've been very fortunate that we haven't had an incident occur because of those buildings. But this is a — this is a concern, and I think one that addresses itself both to the unreinforced masonry buildings, to the upgrade of the code changes, how we deal with any building which has structural deficiencies.

As part of that, we met last Thursday night with the Structural Engineers Association to develop temporary code procedures for San Francisco for the next 90 days. And these code procedures would apply to wood frame buildings greater than two families. And we would trigger what we call our 104(f) requirement to make those buildings — to bring those buildings up to that seismic standard, rather than just let them reconstruct them to the standard they were built originally.

This is primarily true in the Marina District, where we had a lot of wood frame buildings that would collapse on the soft floor. They'd move out of plumb maybe 2 or 3 feet and stay there. Where we had the time to get in, we would require the owner to shore the building rather than let it come down, and then take the time to make the studies to see if they can't jack the building back up into an upright position, then get it back onto the property.

So, we are going to the board Monday with that piece of legislation.

And then, for single and two-family homes, we're going with a piece of legislation that requires a bolting of the foundation of any single-family or two-family wood frame building, bolting the building to its foundation. And that will be a retroactive provision in the ultimate legislation, with some time period to allow homeowners throughout the city to comply with it.

At the end of the 90-day period, we will have a full standard for wood frame buildings for retrofit — rather, for upgrade of the building during the recovery period, and then of developing a retrofit program for all buildings in the city.

The Marina District presented us with a very good laboratory, if you will, as to how buildings behave with different type of garage door openings, with different positions in a block, with adjacent structures. And I think we've — I think we've learned a lot, and I think that the structural engineers have learned a lot. And I think that it's interesting — those people who've applied for rebuilding permits have come with the 104(f) application already in place. They haven't waited for us to pass a code section for that.

And to me, that's very encouraging, because it indicates that what our committee came up with is in line with the rest of the community.

I think there's a chance for some research out of this. And I'm looking at what we can do — I know CalTrans will be doing research with University of California in Berkeley, and also with some people in San Diego. I think there's a chance to do some research on buildings in San Francisco. I have a proposal on my desk now from some geotechs with regard to soils, soils conditions, and what to look for, and how to analyze it, and how to take precautions against problems developing in the future.

We've used some fairly sophisticated mapping techniques to try to map the event as to — with regard to building damage and street damage, and I think as we develop this, there's a chance here for some research, and I think it's time we looked at this more than just as you might look at a cut or a single incident.

The other area where I was interested in seeing some improvements made is in the public information, the media contacts. I followed Hugo up the East Coast, and then I came here and played with the earthquake here. People wonder where I'm going to be next week!

But watching the people in South Carolina deal with Hugo, from an informational point of view, was extremely interesting. There was one TV channel, which was a very popular channel, and for at least seven days, and I'm sure probably longer, they had continual flip cards of how you get childcare, how do you get stress care, how can I get my back yard cleaned, how can I get my roof fixed. And the flip charts would be localized to an area; it wasn't just Charleston and all of South Carolina, but it was broken up by regions.

Now, the program, it ran 24 hours a day. They would break it up with interviews with people who were out in the field, working in the various communities, how help could be provided. There were phone numbers that people could call if they were being gouged — and I'm sure you read in the paper about how people back there had to pay exorbitant prices for chainsaws and for ice — just, I thought, extremely unneighborly, if you will, conditions.

And that needs to be developed, because I don't think that — I don't think we did it good, I don't think anybody in Northern California did it good. And how do you get FEMA help? How do I get a loan? How do I get Red Cross help? How do I get food? How do I get whatever?

This goes on to the establishment of mass care centers. We used Moscone Center for a mass care center. The International Water Pollution Federation was having a conference there. The whole building was full of sewage treatment equipment and displays. And then you try to move in people from an earthquake experience into that environment. Neither one got along very well, and it was hard getting them separated.

I think we were lucky in one sense. All during the last year, my assistant and I have had tailgate parties with people in the department. Every Tuesday or Thursday, we get 30 or 40 people together and spend an hour on how do you respond in the event of an earthquake. And it was really — it's a training class. It's a chance to really get to know the people in the department, but it's also a chance to get them to know what they're supposed to do.

And our people responded automatically. It wasn't something where we had to do an awful lot of phoning. There was some done, but people came in. The right numbers came in, they came to the right places, and we were able to, I think, provide for the City. And, of course, the first things we did was to provide for search and rescue service to the fire and police departments, but we started inspections immediately on hospitals, on convalescent homes, fire and police stations, and those facilities that were needed for mass care.

And I think that the automaticness — and I hate that word, because I don't think it's a real one — but I think that the response that the people made in the department was just as a result of that effort. And there was no question about, "Yes, I come in," "Yes, I got to so and so, such and such a place, and here's what I do."

So, briefly, I've tried to address, in looking at the outline of the various areas your members represent, I've tried to speak to those issues.

Our communications — we need two more channels for our own radio net. Other than that, backup battery for telephones. You know, I think, in a way, we were fortunate, the way it occurred. If you stop and think about it, we had an earthquake that occurred at 5:04, but people were either in a bar or at home or in a ballpark, instead of being out in the street. There were two and a half hours left of light before they got home, so there was a chance to get home. Just a number of things that happened that — it could have been, you know, just another tenth of a point, or another few seconds, and it could have been much different.

I'd be glad to answer any questions.

CHAIRMAN CLUFF: Fine. Thank you. Let me be the first, before I open it up for general questions.

I live in San Francisco, so I was very pleased, as you were, to see how lucky we were. And we know that we have the potential for larger and closer earthquakes, both on the San Andreas and Hayward Faults, and so that's what we're focusing on, in terms of seeing how we can learn out of this to be better prepared and to mitigate the known hazards that we've all been wrestling with.

I wanted to refer to the seismic standards that you're implementing with regard — with the structural engineers with regard to wood frame buildings. And it sounds like you're starting to consider the incorporation of geologic and soil conditions that are very important in that process.

As a geologist, it was very clear to me that a large percentage of the damage was attributable to places where there were soft geologic conditions, liquefaction or ground failure, combined with the weak structural elements of the buildings. And it was — I'm sure, out of the geologic studies that are going on, there will be a direct correlation with the sand dunes out in the Sunset and other places, not only in the Marina.

So, I would recommend that you try to incorporate geologic and soil conditions in those ordinances that you're considering.

I would like to ask you to give us some insight and perspective in terms of your position. You obviously are in a very important position, with authority to take a lot of actions. And we've been wrestling with this issue of what level of seismic safety is affordable. We have all kinds of social demands on our resources, and there's no such thing as absolute safety.

So, there's a certain level we can go, and so, by definition, we have to accept some level of risk. And we have various views of that. We heard testimony yesterday of individuals who understand some high level of hazard and are willing to make a value judgment that that's still acceptable, and occupy buildings that others clearly would judge those buildings should be evacuated.

Could you describe to us the thought process that you and your people go through to make those hard decisions in terms of life safety?

MR. EVANS: Well, I think, in a recovery effort, or perhaps in dealing with unreinforced masonry buildings, I think that the first thing you want is a building that will stand up long enough for people to get out. I think the valuable thing we have is human life.

And the next valuable thing you have is, is there a resource or something in that building which you need to take extra special pains for, to protect that?

And then I think that, beyond that, you look for the maintenance of a life standard or a style that allows people to coexist or to function while you make your necessary retrofit, your change of standards.

And this is a difficult one, because right now we're in an ideal situation in the Marina — the buildings are empty, and you can go in and do fairly extensive work. You can take up partitions, and you can have a lot of dust from plaster and so on, and it's not that difficult. But if you have a building that's full of people and no place to put those people during the retrofit, that's a whole different story. And I think as they found in Los Angeles, when they tried to implement their UMB program that, they had certain problems that that — that that caused.

As Mr. — David told you this morning, we have a team looking at this, both from the physical as well a sociological and financial and every other impact that can be imagined, because I think that those things ought to be considered. But I think our first consideration is making sure the people in the building survive.

CHAIRMAN CLUFF: Thank you.

Yes, LeRoy?

COMMISSIONER CRANDALL: Mr. Evans, we've heard a lot about the power and the communications. What happened to your utilities, water mains, sewers, and what needs to be done about improving that, if at all possible, for the so-called "Big One"?

MR. EVANS: I think the utilities, the gas company, in the Marina District, had several thousand feet of failure. All the old 25-foot sections of bell-and-spigot pipe came apart. The water pipe — again, a lot of that was old. There was — on some of the curbs in the Marina, I think there might have been a horizontal movement of some of those curbs of 6 or 8 inches, which would collapse service connections for water, side sewer connections, and so on.

The main sewers, in general, functioned properly, except where we had — either through vertical as well as horizontal displacement — we had a number of crushed sewers. We're televising our sewers now to see how bad the problem really is.

The failure that bothered me was the failure of the high-pressure system. We had some 23 breaks in the high-pressure system. Some of that system is 90 years old, and I guess the thing that we've been stressing and, I'm proud to say, has happened in San Francisco, we have an infrastructure study program going now, where we are doing a study of the infrastructure of the city, every element of it, whether it's a street, a sewer, water line, whatever type of public building it is. And we will have — and as you know, we have Proposition A on the ballot this year. We didn't really need to go out and stage an earthquake, I don't think, to get the people to vote for it, but that was the first of what I think will be a number of bond issues that we have to upgrade our infrastructure.

And the emphasis is not only seismic, but it's asbestos, handicapped access, and bringing buildings up to code standards that they should be up to.

So, you know, why — in some areas, they failed. We've got brick sewers that didn't — nothing happened to them at all, just perfect. We have a number of brick sewers that went through 1906 and functioned perfectly after 1906. It's — I don't have a good answer for that.

COMMISSIONER CRANDALL: Does your economic impact consider the repair of these facilities that were damaged?

MR. EVANS: Yes, sir. Yes, sir.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: At the outset, you mentioned a pre-existing contract for Operation Bulldozer that I guess you did not actually activate. If it had been a stronger shaking here and you had activated it, how do you contemplate using that? Is that basically to clean up debris in the streets, to move fast, to bulldoze down unsafe buildings, or kind of how would it be —

MR. EVANS: Excuse me.

The first thing is to clear the streets to get the emergency vehicles through and develop means of evacuating people and bringing in supplies.

The second thing, then, is to — and I don't like to talk about bulldozing buildings, because in the search and rescue operation is when buildings get taken apart, as part of that function. In the recovery period — and I look at the recovery period as the first 48 hours following an event, the next three to five days, and from there on out until all the scaffolds are taken down. But in the — in the next — in the first 48 hours, in the next three to five days, you do a number of things to a bunch of buildings that you can't save. And some of those situations, you need people to either haul material, debris.

We had to — one chore that fell to the department was to provide for transporting fuel to the fire department, because they had fire trucks on the line in the Marina, and they couldn't take them off the line. We don't have any gasoline tankers. You have — and to complicate it, you have diesel, unleaded and leaded fuels — we use mostly unleaded, which we transported. We also transported coal oil and fuel for the convalescent homes, because they could not keep their supplies — their tanks were too small.

That's — that's a function that has to happen. If I'd have had a contract with an oil fuel company, or had one handy, we could have handled the fuel that way. So, those are ways we could have used them. I — we didn't need at any more at the time.

CHAIRMAN CLUFF: One more question, Dan.

COMMISSIONER EBERLE: Yes, Mr. Evans. In Southern California, a number of county public works agencies have gotten together, and they're in the process of developing a public works mutual aid agreement. I think it's ready to be executed. In that, they address partially some of the questions of liability and financial concerns that you expressed. It is, of course, between public agencies and not between the private sector.

Are you doing anything — aware of anything like that happening up here? And if — would you be interested in something like that?

MR. EVANS: The answer is yes in both cases. We are working with the adjacent counties in mutual counties, and we did draw on it during the earthquake. The — and we did work with the people in San Mateo We have formed — there is a group now, the building maintenance people have a group, building superintendents — it's a group of those people, and we also have a group of folks that deal with street and sewer maintenance that have gotten together, the superintendents. And so, they have developed mutual aid pacts.

Most of them right now are kind of unofficial. They seem to work better when they're unofficial than when they get too boiled down in paperwork, but I think that has to happen ultimately, yes.

And we would be interested.

COMMISSIONER EBERLE: I'd be happy to provide you with a copy of that, the draft, if you're interested.

MR. EVANS: Let me give you my card, and you can send it to me. I'd appreciate it.

CHAIRMAN CLUFF: Well, thank you very much, Mr. Evans. We appreciate your taking time out of your busy schedule to come over and talk to us, and we look forward to continued cooperation.

MR. EVANS: Well, it's been a pleasure to be here, and I hope we can work together to solve more of this.

Thank you.

CHAIRMAN CLUFF: Thank you.

The next part of the presentation is Chief — or officer of the San Francisco Police Department. Lieutenant Tony Novello is here.

Would you like to come up to the table, Lieutenant? We're very pleased, and again, we want to commend you and your troops for the fine job that they did in the emergency during the earthquake and immediately thereafter. As everyone has said, television, international and national, they certainly have learned a new respect for people who are often criticized. And we're glad to see the fine job that was done.

LIEUTENANT NOVELLO: Thank you.

CHAIRMAN CLUFF: And you've heard the discussions we've had. If you could follow the same pattern, let us know what worked, what didn't work, how we can work together with you to make seismic safety a higher priority in the future.

LIEUTENANT NOVELLO: Well, again, thank you. And the chief sends his regrets that he couldn't come. I was only notified about an hour ago, myself, of this forum. And I assume I was chosen because I had a role in the earthquake. I'm the officer in charge of the Special Event Management Unit, and earthquakes were thrust into a "special event" category and placed upon me.

(Laughter)

LIEUTENANT NOVELLO: So, at the time of the quake, our unit also is charged with the policing of Candlestick Park. So, at the time of the quake, we were at Candlestick Park with about 65 officers, and more for bells and whistles than any other reason, we had the police command van out in center field.

And as it turned out, that seemed to be the most lucky choice we made. We had the opportunity to immediately set up a police command post at Candlestick, evaluate the situation. It was fully staffed with our first team of telecommunications people and computer people, and very fortunate that they were all present at the game and that we could evaluate the situation and safely evacuate Candlestick in pretty short order.

The problem we had at Candlestick was three and a half hours after the earthquake, traffic was still gridlocked trying to get out of the parking lot. But the parking lot is designated as an earthquake-safe area, as a relief area, as Marina Middle School is. So, there was no concern, and we were fortunate to be out there.

The command van unit was then moved to Turk Street at about nine o'clock the evening of the 17th and took over the function as the police city command. We had everything operational within 45 minutes after the earthquake, as far as telephone service and everything else. So, we stayed at Turk Street until the following morning, when we then moved the police command center down to Marina, and operated as Marina command for the next seven days.

The chief wanted me to tell you that the highlight, from his perspective, was the outstanding coordination and cooperation between department heads, like Mr. Evans who you just saw, the chief of the fire department, the head of the OES, the chief of the police department, and Mayor's Office staff, and other law enforcement staff. We are very pleased that that coordination took place, and so effectively.

As far as negatives go, as far as the police are concerned, we really don't have a lot. We — as observers from the outside, Mr. Evans touched on it, and we found that communications and updates to the victims were probably the biggest thing that lacked. Perhaps a three- or four-hour handout of some sort, or some status situation that — where the people involved could get up-to-date information is critical in a thing of this — a devastation of this nature.

It was — we took a lot of heat on the perimeter in the Marina, because updated information and changes in who could get into the area and who couldn't get into the area were not transmitted to us. Therefore, by the time we found out about it, we had already hurt a lot of people's feelings. They would come up and say, "If I have a yellow pass, I can now get into the area without an escort," and we wouldn't let them in because that was not the latest thing that we had heard. They had heard it at the Marina Middle School, and we hadn't heard it. So, we would get enough complaints, and finally the information would filter down to the cop on the street.

That was the only real negative things, was the lack of information flowing downhill rapidly.

We practice — every year we practice this with OES and all the major departments, PG&E, Pac Bell, and everything. And one of the main fears that the police and fire department had was that if an earthquake of that magnitude hit the city, that our personnel would go home, be it the East Bay, the Peninsula, San Francisco, or Marin County. That did not happen. It was just — it was a fear that we had that people would be so concerned about their own family that they wouldn't stay on duty.

As it turns out, just the opposite happened. Off-duty firefighters and police officers that saw this on the news immediately responded back to the city. We had as many policeman as we needed at any given time. We turned down help from other jurisdictions. We had plenty of people working. When you took into consideration the couple hundred parking control officers, or meter maids as you may know them, and the on-duty officer, the inspectors, the investigators that are usually in plainclothes, we had enought police officers to handle all the search and rescue efforts and perimeter controls, traffic control, crowd management, things that we needed.

So, that fear of a mass bailout was unfounded.

I really don't have a whole lot. We're pleased with how we handled the situation, and it seems the public is pleased, for a change, with us. So, we don't want to criticize too much.

CHAIRMAN CLUFF: Well, it is — we'll start with some questions — it is gratifying to see, when things do get down to some real emergencies, everyone does pull together, and they kind of put aside their egos and get on with what needs to be done. I had the opportunity of being in Mexico City when the large earthquake struck Mexico City. And in the first hours in a day or so, I observed the same thing I observed here in San Francisco: no panic, people cooperating. The man on the street was taking responsibility to work with the authorities to get things done.

However, in Mexico I observed one thing, and I wanted to ask you if you had any potential effect from this — was all of a sudden, people started arriving from all over the world, France, Germany, United States, Japan, and Switzerland, and so forth, to demonstrate how they could help. And they were certainly well intended in the rescue, heavy rescue operation. And all of a sudden, it turned into an ego trip for this people, on who was in charge and who was going to make what decision.

It was very discouraging to me to see that take place. Obviously, that didn't happen here. You people were always in charge.

Did you encounter cases where people may have tried to come in and take over some responsibility, or how do you handle that?

LIEUTENANT NOVELLO: Not take over. There were scores and scores of people that volunteered to help. There were people that brought food, people that brought trucks and volunteered to help. They were all directed to the Red Cross at the Marina Middle School. What we found immoral was the tourists coming in to look at the carnage, and walking up to people's damaged homes and pulling on the plaster and things like that. We found that very disheartening, and to see tour buses bringing groups in to the Palace of Fine Arts and letting them off to walk down Marina Boulevard.

Who that hurt the most were the residents that were kept away from their own home, and then watching the tourists come in and sort of — I don't know — you know, on their grief, with the cameras — that was demoralizing.

CHAIRMAN CLUFF: I felt — I felt that sensitivity when I was in the Marina District shortly — a couple of days after the earthquake. And while I was there on my official capacity taking photographs, I was very careful, because I sensed the difficulty that the people were going through, and I did notice, in a couple of days later, these large vans of people.

And I compliment your cop on the street who — they were very effective in keeping those people out.

LIEUTENANT NOVELLO: We tried, and there was some concern with the press, too. Everybody became the press. If somebody wrote a book twelve years ago, fiction, about earthquakes, and was doing research — I had a travel letter there from an Orange County magazine that wanted to go in to the area to talk to tourists about why they came to San Francisco and into the devastation.

You know, the press was difficult to control. They have a right, under state law, to go into an area that is closed off by calamity or any other reason. But then the numbers were overwhelming, and, you know, the safety issue — we had to take tours of press in, rather than just let them roam free.

The logic of letting somebody whose house was tagged green go in 24 hours a day was questioned by our officers on the perimeter. And if you don't tell anybody, there was even sort of a half of a mutiny, where officers just refused, at two o'clock in the morning, to let people go into their home without a flashlight and to stumble in front of buildings that were marked red and perhaps ready to collapse, and stumble over cracked driveways. They were walking in the middle of the night without flashlights or anything else.

So, there was some questioning of the logic of allowing people in to their home 24 hours a day.

CHAIRMAN CLUFF: Further questions? Dan?

COMMISSIONER EBERLE: The CalTrans representative mentioned that over at Oakland, they used the incident command system, which was very effective. Was that system — are you familiar with the system, and was it utilized over in San Francisco?

LIEUTENANT NOVELLO: I'm not familiar with what the incident command system is.

We had no problems with communications, telephones. Our — the Hall of Justice phones went down just briefly. The command van's cell phones went down just briefly. We had tremendous cooperation from Pac Bell. At Candlestick Park they had eight phone lines in to us within five minutes. And as we moved to Turk Street, five Pac Bell trucks moved with us and gave us phone service immediately when we hit Turk Street. They moved with us again the following morning to Marina.

So, we had no communications problems, telephonic or our police radios. Everything functioned excellent, excellently, no problem at all.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: Like the chairman, I'm a resident of San Francisco, and I want to thank the department for handling a different situation in a very fine manner, very professional manner.

I do have one question, however. Getting back to the backup power question, you referred to the gridlock at Candlestick, and my home is up looking down on the Marina —we had a box seat. The thing that was apparent was the gridlock along Lombard as all the traffic lights went out. And it occurred to me that in that kind of a situation, some sort of a backup power system multiplies the effect of the police department, who don't have to stand at all the corners directing the traffic, because Lombard, for all practical purposes, just locked up, as I'm sure you saw, tight.

LIEUTENANT NOVELLO: Yeah.

COMMISSIONER WASTE: And a backup power system of some kind on that kind of the system, the traffic system, might be of some value.

LIEUTENANT NOVELLO: I'd have to agree a hundred percent, because there is a new vehicle code section that took place in — took effect in January, which I didn't see being complied with, is if traffic signals are out, it automatically becomes a stop sign, whereas it used to be you were on your own. If you come up to an intersection that the signals are burned out, it becomes a four-way stop. I didn't see that happen.

A backup system would have been tremendous. There was no signalling in the entire Marina for a few days, as I recall.

COMMISSIONER WASTE: Thank you.

CHAIRMAN CLUFF: Lieutenant, crime and looting is always a concern that we've read about and so forth, and having investigating a lot of earthquakes worldwide, rarely have I ever seen this problem develop from earthquakes. Other disasters, sometimes that's not the case. We understood, and I personally observed, a lot of open windows in the Financial District of San Francisco within an hour after the earthquake, and I was very pleased to see no policemen around and no one walking in and taking computers or things off of shelves.

Can you give us a little insight and perspective on that?

LIEUTENANT NOVELLO: Actually, crime went down during the earthquake —

CHAIRMAN CLUFF: Yes.

LIEUTENANT NOVELLO: — overall, reported crime. Of course, there were a lot of people hesitant to report crimes. They knew we were too busy to respond to some simple, nonearthquake-related theft of a bicycle, as an example.

But inside the Marina perimeter itself over the week, there were probably only six or seven arrests made for looting, and the opportunity there — when we first went through with search and rescue, every apartment door was kicked open, every house door was kicked open, so the entire area, of course, was very vulnerable.

It was very fortunate, although you say if it has not happened in other cities — we expected it, and we were surprised that it didn't happen, that the opportunists didn't take their cue and go in. I'm sure it happened as the rules of getting into the perimeter were relaxed; it gave thieves more opportunity to plot and plan, and they probably did conduct more. But the looting problem was minimal, very, very minimal.

CHAIRMAN CLUFF: Any other questions?

(No response)

CHAIRMAN CLUFF: Well, thank you, Lieutenant, for coming over, and we appreciate the good work.

LIEUTENANT NOVELLO: You're quite welcome. I'm sorry I wasn't so — quite so well prepared.

CHAIRMAN CLUFF: Oh, no. This is exactly what we want, a spontaneous response from your experience. That's —

LIEUTENANT NOVELLO: We don't have any — we haven't even debriefed our own people yet. There were so many command posts going, so —

CHAIRMAN CLUFF: Sure.

LIEUTENANT NOVELLO: — we don't have a full package, other than $2.1 million in salary, in overtime, to police the earthquake. That's all that's come up so far, is the cost.

CHAIRMAN CLUFF: Right.

LIEUTENANT NOVELLO: Okay, sir.

CHAIRMAN CLUFF: Thank you very much.

The next speaker is Dr. Maida Taylor, Emergency Medical Volunteer services.

Dr. Maida, welcome to the Commission meeting. Thank you.

DR. TAYLOR: I had no particular professional training to handle disasters, other than my internship at San Francisco General several years ago. And the first day after the earthquake I spent trying to get in touch with my family and reassure everyone that we were still — that the West Coast hadn't fallen into the ocean.

The second day after the quake, I heard a call on the television that they needed volunteers at the Marina Middle School, and went over there at about six in the morning to aid with the staffing in that facility.

And in no way can I criticize the American National Red Cross. They were extraordinarily competent in setting up a number of services that were needed, but when I got there, I found that in terms of the immediate medical needs of the people in the shelter, there was a good deal of confusion, and I wanted to help, and I want to help in the future, so I organized this bit of a report.

The level of catastrophic medical care that's needed in an earthquake like this is handled in the hospitals and emergency rooms, obviously, that are left standing.

I think a second level of medical care that one can identify are minor injuries, things like lacerations, fractures, and head injuries without neurologic impairment. And we also can identify a need for care for individuals who have exacerbation of previous medical conditions, such as asthma or heart conditions, who, in a catastrophic event, will more possibly become much more impaired, and those people need to be cared for in an acute care setting.

The third group, and the group that was being cared for at Marina Middle School to some degree was the relocation and assistance of impaired or elderly individuals who have special care needs, the handicapped, and patients with home monitoring devices or infusion therapy. We now have wonderful automation of medical care, so that many people on special monitors, cardiac monitors, breathing monitors, are at home.

And I understand there was a large number of false signals at the time of the quake, where power got interrupted and emergency monitor systems all sent out massive numbers of displays to the monitoring agencies that people were having heart attacks, or people were having respiratory arrests, and no way at that point for those agencies to then contact the individuals or contact their doctors, because the phone lines were jammed.

And those individuals might then, because their monitor says — if you have a patient on a cardiac monitor and it says you have an arrhythmia, or you're having an alarm, they will then, in turn, try to get to medical facilities for care.

What was primarily being done at Marina Middle School is what I would call supportive urgent care of these displaced individuals. My impression was that people — well, number one, people will need replacement of their medications, provision of over-the-counter medication, since the pharmacies were closed, replacement of eyeglasses for the elderly who had them lost or broken, prescription of new medications for anxiety and sleep and other mood disturbances that resulted from the quake, and treatment for minor illnesses that developed just in the course of human events, people with coughs, colds, diarrhea, constipation, et cetera, and who cannot reach their own physicians because of a lack of transportation or a lack of phone availability.

When I arrived at Marina Middle School, and just to briefly outline what my experience was, I came in and I was told to go to a room for orientation. There was nobody to orient me. Everybody was out doing something, so I went into the actual shelter, the actual medical care triage area that had been set up, and no one could identify themselves as being in charge. There were a number of nurses who were actively involved in taking care of elderly who were in residence. Several other people were going out to help bring elderly and injured — not injured, but elderly people who had been out of their homes and were being evacuated to the shelter.

And what I found was, the elderly who were there were being treated with an amazing amount of loving kindness and attention. They were being fed, they were being cleaned, they were being hydrated, and each one of them had practically a nurse sitting with them or a sitter in attendance. However, most of the elderly who were in Marina Middle School said that when they were evacuated from their homes, they were not — they were under the impression that they would go back within hours, and they left all their medications at home.

And the problem with elderly in particular, and with other people with chronic disorders, is that leaving those medications, many of them, though they were not sick at the time, if they did not get those medications in short order, and missed perhaps even one or two days of medication, would become perhaps acutely ill. Patients on blood pressure medicine might become hypertensive, might have strokes. Patients who need glaucoma medication need their drops at very regular intervals, and could end up losing an eye for a lack of those medications for any appreciable period of time. Patients on psychoactive drugs, such as anti-depressants, can end up having seizures and very severe medical complications if those medications are withdrawn suddenly. And these individuals left the medications, had no idea that they could not go back, and then were very agitated and upset that they could not take their scheduled medications.

In addition, because of difficulties in getting phone lines and physicians not being available, we couldn't call all of their physicians to identify what medications they were on.

Most of the medications that we had available at Marina Middle School were donated by people who had stuff in their medicine chests. So, we had tons of pediatric cough medicine — we had no coughing children, however — and a lot of Bactine and Neosporin type skin ointments, which are not real useful in that setting.

The other difficulty was that Marina Middle School was identified as a first aid center, so a large number of people, after 8:00 a.m., started dropping in for medical care, assuming that medical care was on site, and asking for a range of acute service, not just the first day. They wanted blood pressure checks, they wanted medication replacements, and treatments for the kinds of minor illnesses I talked about above. None of these things are emergency services that need be rendered in an emergency room. Basically, what you need is a drop-in primary care clinic and dispensary for these individuals.

The difficulty that I had there was that at one o'clock, a woman who was a Red Cross officer came in and said that we couldn't do anything, we couldn't do any of the things that we were doing at the time, and that we were basically to provide only first aid. And, for example, we were told that even as physicians, that we could not apply an ace bandages, that ace bandages are compressive, they can lead to vacular insufficiency if inappropriately applied, and that that was not covered by the services to be provided in the shelter. Basically, I was told that I couldn't diagnose, treat, dispense, or prescribe, and, you know, I don't have many other talents available.

And at about three o'clock, a Red Cross volunteer nurse who I had worked with at San Francisco General arrived, and she was Red Cross-trained, and she was the first person to identify what forms we needed to find out, what kinds of identification and registration we needed to provide to the Red Cross for the individuals that we saw, and she took over active triage so that we could continue to provide what we had been doing.

And basically, what we were doing was refilling prescriptions for people who brought in empty vials of medication. If the individual could adequately describe what their medication was, we refilled the medication. We had runners who went to the pharmacy in the neighborhood to refill them for them, or we provided from the samples that we had on-site for a limited number of medications.

We did some limited diagnosis. We checked blood pressures for people who thought that they might be having a hypertensive episode, treated some gastrointestinal upsets, and some respiratory disorders.

Apparently, at seven o'clock that night — I was called at 6:30 to go work at Moscone Center, and while I was on the phone, I got a call from Marina Middle School asking me what to do with all the medications we had on hand, because the medical facility within the shelter was going to be closed, that at that point, the emergency was no longer in effect, and that the provision of medical care of that kind was not necessary. They were told it was not necessary, and they called me to find out if I knew where we should take all the leftover medications.

In addition, we were feeding — we had a large number of elderly who were brought in, who had been in their homes for two or three — two days without food or water. When those people were brought in, we checked for their level of hydration. We had glucose testing available. We checked their blood sugars to see if they were, in fact, not hypoglycemic, and if they were not, we hydrated them and fed them, and avoided having them arrive at emergency rooms, where they would receive minimal care, because more acute injuries, more dramatic injuries, would most certainly be taken care of first at an emergency room.

I also contacted Dr. Maryanne Johnson, who's the medical director at Laguna Honda

Hospital. And Laguna Honda was — had a ward ready to receive some 50 to 100 feeble or handicapped elderly, but apparently none were ever sent to Laguna Honda, and she and I felt that — for the following reasons.

Number one, the elderly felt that they didn't know how quickly they would be allowed back into their homes, and did not wish to leave the Marina, because if they were allowed back, they wanted to go back right away. And Laguna Honda was perceived as too far away.

They also were under the perception that they could get supportive care at Marina Middle School, and wanted to stay there.

The reason the elderly didn't want to go to Laguna Honda was many of them still see Laguna Honda as the old folks home, and felt that if they got sent to Laguna Honda, they wouldn't get, and wouldn't be — that they would be permanently committed and never released. It still has that stigma. In point of fact, Laguna Honda has a long waiting list.

Other friends and acquaintances who are emergency physicians or primary care physicians who work at East Bay hospitals were anxious to help, and had no way of getting to their respective emergency rooms or hospitals, but had no idea where in the city their services could be utilized.

The nurses who were at Marina Middle School were almost all intensive care nurses and emergency room nurses, who were extraordinarily competent in caring for high-risk and complex patients. And they were tremendously under-utilized, in the sense that the kinds of services needed in a shelter were a much lower level of care than these ladies were used to giving.

In addition, the physicians who were on site with me at Marina Middle School — when I arrived in the morning, I found out I was the oldest and most senior physician on site. I had a fourth-year medical student and another young physician, and I was the senior person, so I kind of took charge. That's what I do at my office, so I figure, "Well, I can do that here."

But the people who arrived later in the day were primary care faculty, family practice people from the University of California, people from Letterman Hospital, eminently qualified in primary care and very proficient in providing the kinds of drop-in medical services that people were, in fact, demanding.

My feeling is that if all that is needed in a shelter is first aid, that is, put a bandaid on a cut and wash cuts and treat blisters, that basic first aid certification is all that's required of the personnel. And nurses, RN's, and physicians should have their skills utilized in a setting where they can perform the kinds of services that they're trained to provide. Supportive care can be given by counselors and social service personnel.

In a big quake — and we all know what I mean — we all know, I'm sure — the emergency rooms in hospitals that are operational are going to be choked with trauma cases, and minor illnesses and minor injuries are going to need to be treated in the field or shelters, because, basically, transportation and communications will be very disrupted.

I think there needs to be a mechanism — and it's really easy to identify people that were injured on places like the Cypress structure, who have massive injuries and need to be Medivacced to complex trauma centers. But there's a whole other mid-level of medical care that was disrupted, and, in a larger earthquake, will be disrupted for some time, with a lack of availability of the patient's individual physicians.

We need to have a mechanism for providing a field hospital clinic and dispensary to treat minor illnesses on site. When I was a teenager, I went to an international scouting encampment of some 10,000 girls, and we had an Army field hospital set up to take care of the bellyaches and the coughs and the colds, and the cuts and the sprains, and so forth. And the Army, at that time, was very proficient at setting up a field hospital in a matter of an hour.

I think that I'd like to work on this. I'm not an emergency physician, I'm not a trauma surgeon, but I am a primary care provider, and the kinds of primary care needs in an even bigger earthquake — water contamination leading to gastrointestinal disorders, the massive number of respiratory illnesses that accrue when people are in shelters, because of the close proximity and the communicable diseases that spread like wildfire through a housed — institutionalized, if you will, population. I think that that needs to be addressed in the event that a larger earthquake precipitates the need for ongoing care in a shelter setting.

And I'll be glad to answer any other questions you might have.

CHAIRMAN CLUFF: Thank you, Dr. Taylor. I want to commend you for your willingness to volunteer. And it's through volunteers like you that really make a huge difference. And we understand that some people did have difficulties, and you've raised some important issues that we need to address. And so, I'd like to ask the Commission if they would like to ask questions.

Pat, I'm sure you must have some questions or observations.

COMMISSIONER SNYDER: You know of my interest in this.

Doctor, I'm Pat Snyder. I'm a registered nurse and have been affiliated with the Red Cross for a number of years. And I appreciate what you're saying. And without going into the whys and wherefores of the confusion in the early hours, I can agree with and understand everything that you've said.

What I would like to hear more from you is recommendations for the future, because, as we look at catastrophic planning, we're looking at long-range shelters, which are very different from what we normally deal with in an apartment house fire or hurricane, where people are evacuated for just a number of hours. So, do you have any specific recommendations that we might be able to act on?

DR. TAYLOR: I think, coming from the state, some provision or some establishment of a document, like a passport or an immunization record, for elderly or individuals, not unlike Medic Alert, where individuals who are on a number of very important medications have that registered on them, have it in a necklace, a bracelet, or a passport type booklet, with all of the medications updated by their physicians, so if they — you know, I think it says right there in the earthquake preparedness book — you know, grab your medications. But the elderly didn't realize they were going to be gone as long as they were.

But having that sort of a document available on site — if you can bring it out, keep it in your wallet — a listing of medications for the elderly, with the doses, and that updated by the person's physician, would be very, very helpful.

I think that we had a tremendous support from — I have to mention them — Longs and Walgreen's Drug, because of their computerized prescription system, an individual could go in, and from any other one of those pharmacies, they could pop up their recent prescription record on the computer, and refill them. They were — Walgreen's was refilling prescriptions without contacting physicians. They were just giving them out according to the patient's previous prescription record. That kind of computerized medical system is tremendously supportive.

In terms of the ability to have an emergency — one of the things I thought of was an emergency dispensary, having a boxcar, having a van stocked with routine medications that a large number of people use, labeled, alphabetized. And we did have two pharmacists from — if I'm — I don't remember from where — show up late in the day, ready to dispense. But we didn't have very much for them to dispense.

But if there could be an emergency dispensary ready and stocked, to be moved on site to provide people with replacement medications, to keep them from becoming ill — I mean, people asked for their birth control pills, I mean, not that there was anyplace for them to do anything, but they needed their birth control pills to — those kinds of — it seems trivial, but people do end up having secondary illnesses develop from not having their primary medications maintained.

Those are things off the top of my head.

CHAIRMAN CLUFF: Further questions by commissioners?

Tom?

EXECUTIVE DIRECTOR TOBIN: Dr. Taylor, your testimony is really very interesting. As you know, we're going to make a transcript of this. We'll give a transcript to Dr. Haines at the Emergency Medical Services Authority in Sacramento, because I think your insights will be of great value to them as well.

DR. TAYLOR: I hope so. And as I say, anything I can do to help, I'd be glad to. Thank you very much for your attention.

CHAIRMAN CLUFF: Thank you very much for coming to our meeting.

The next part of the presentation is Ted Harris or Bill Bombeck. I guess Bill Bombeck is here. I saw a note.

Ah, yes. Come to the table, please. This is the American National Red Cross, on damage assessment. I guess that's what this abbreviation means.

I think you've been here long enough to hear the general procedure. We'd like you to be succinct and to the point and give us your views on what worked, what didn't work, and how we can work together to improve the whole situation for a much more severe event, which we know is not "if"; it's when.

So, thank you.

MR. BOMBECK: Yes, sir. I'd like to introduce two fellow Red Cross people who are here with me.

Al Poire, on my left here, is administrative assistant at the desk. I'm the damage and assessment officer on the job with the national Red Cross. We also have Ed Carroll. Ed Carroll worked on the damage assessment desk with me for about a week, and he's been a service center manager at the Moscone Center.

I thought it would be interesting to hear from these two gentlemen too about testimony involving the Red Cross involvement in this particular disaster.

First of all, if we could, we passed around a sheet with same rather interesting comparative data from previous earthquakes that the Red Cross responded to in California. I thought that may be of some interest. I don't want to dwell on the numbers at great length.

We also have a transparency, for the benefit of the people in the back who do not have the handout. We'll take a quick run through this so you can see some comparative numbers between the Southern California earthquake in February 9th, 1971, and the more recent one, in October 1st of '87 in the Los Angeles area, and also the figures, that are still incomplete because we're still much involved in this particular disaster relief, from the Northern California quake that happened October 17th.

(The following remarks were illustrated by an overhead slide transparency.)

MR. BOMBECK: I'm going to quickly run down through the numbers, and we will stop at some — and I want to back up a little bit — but at the top, of course, the time of the events, the Richter scale numbers. And then, as far as the Red Cross is concerned, since we work, obviously, with all of our local chapters, the number of chapters involved in a disaster area are important to us, so we list this number too.

The casualties listed, I thought, were rather interesting, comparing the '71 quake with the one — recent one. Illness and injury numbers and hospitalized also, I think, some interesting comparisons. I have no particular explanation for them, since my work with the Red Cross is damage assessment, and not the health-safety portion of it. But I thought it was interesting, the differences between the 3,500 in 1971, and '89 — 81 in 1989, a vast difference between those two.

I'm going to skip the next section for now, because that's what I'm about, and I'll talk about that in a little more detail in a minute. It has to do with the damage assessment, that whole section.

We'll go down to where it says "mass care." As you're aware, the Red Cross responds to disasters in really two ways. Our first response is a mass care response that is — we're very proud of the way the local chapters and local volunteers and all the people in the disaster areas responded, because this is before the national Red Cross is able to send people to come and help.

So, in the first hours and the first couple days, most of the magnificent mass care that happened, the shelters that were opened, and all the feeding that was done — that's still going on, by the way — but I'm talking about the emergency phase, the first couple of days — most of this is taken care of by local Red Cross chapters and their volunteers and the people in general.

And you can see some comparison numbers there between the number of shelters that we used in '71 compared to '89, and the number of people who were needing shelter by the Red Cross.

The last section on the sheet has to do with a phase of assistance that we go into that we started last Monday. It's individual assistance to families. This is to help individual families get back on their feet and return to their predisaster condition, and we open up service centers, and the service centers permit us to have clients come to us with their disaster-caused needs, and our effort is to help them recover.

You can see some interesting comparisons between those — the quake in '71 and '87 and '89. Basically, this is the phase that we started a week ago Monday and are very deeply involved in this right now. We have many service centers — I don't show the numbers here — that are up and running, where individual victims come in with family needs. We interview them and try to help them to recover from this disaster.

Especially in the recent quake, these numbers that you're looking at here, the 9,000 requests that we've already had, and the 8,743 that we've already assisted, this is really going to be a much larger number, because this particular part of our program will go on for a number of weeks into the future.

Now, I want to go back, because I want to talk about damage assessment. I understood that when we were invited here, you were particularly interested in this part of our operation. We list our damage in the Red Cross — first of all, let me tell you how we do this.

We do what we call survey and damage assessment. There is really two uses for this survey and damage assessment in the Red Cross. One of the major uses is to provide to the service centers a listing of damaged structures with addresses, so that when clients come to the service center to seek assistance, it will be easier to verify their needs on the basis of damage to the structure that they lived in.

We provide this information, the damage assessment. We train — these are mostly local volunteers that we train to — with the assistance of maps, someone who knows the area. They are trained in a brief class that typically three to four hours, but when we're involved in an emergency like this one was, we are able to train these people to do this work in a half-hour, 45 minutes. And they'll drive through a predetermined area with the teammate, and they will do an inspection of outside damage to dwellings. The dwellings, we classify as single-family dwellings, or mobile homes, or apartment units. This is not an inspection comparable to a structural engineer. It's not an inspection comparable to a contractor. We use an average man or woman off the street that we train to give us this estimate of the damage.

We classify our damage in three general categories. If the damage is destroyed, this means that the house can not be rebuilt, it's not liveable, and as far as we've concerned, these people will need much assistance. The other classification we use is called is major damage, and this means, at the present time this house is not inhabitable, but it could be rebuilt, it could be put back into working order. And this has great implications for assistance from the Red Cross also. The other classification is minor damage. It could be anything from windows broken — but this means that the home is still livable, people can still reside there.

One of the important things to understand about this is this is an outside estimate of the damage. Because of the time constraints we have to produce the data, we're unable to enter homes. And even if we did, we're talking about the average man or woman or person we've trained would not have the expertise to be able to ascertain how serious the damage would be, or what implications this may have down the road. So, our examination is of the outside of the structure.

We do two things with this information. We try to place on worksheets all of the homes, all of the apartment units, all of the mobile homes, and put them in these three categories. We use the total numbers from the whole earthquake area, all the way from Marin County down to Monterey, as a matter of fact, and Salinas. We total these up, and the total numbers, as you look at these — at the transparency, you can see, from the quake in '71, there's 38,564. The recent quake in Los Angeles is 14,000, so this particular earthquake we're dealing with now — and these numbers are still incomplete — but we have 22,660 dwellings with damage.

The number has significance, not only for our family service operation, to give individual assistance to families when they apply for this in service centers; this number also has much significance for our staffing of the job. It helps our mass care people know where to put shelters. It helps our nurses know where they're going to need assistance there. It helps our feeding operation to know where people would need food. It helps the staffing operation so they know how many people that they need on a particular job. So, we perform a support function for the poeple who are directing the relief operation, by providing them information based upon geographic areas, as well as total numbers, as well as the seriousness of the damage.

In most disasters, the most significant numbers of damage usually fall in the minor category. So, the Red Cross has a particular interest, of course, like everyone would, in those kinds of numbers that show destroyed dwellings or show dwellings with major damage. Those have the greatest implications for relief.

Also, the geography makes a great deal of difference, socioeconomic conditions, the demographics. Some people will need much more assistance than otheres, and there's a great deal of difference between people who may need help in San Francisco and people who need help in Santa Cruz. So, knowing the demographics of the area, knowing how much insurance people have. And, of course, it's our understanding that the insurance is unlike other kinds of disasters, where many people would not have insurance. This will have a great impact upon the Red Cross relief effort.

So, the numbers have great significance, and this is why I wanted to spend a little time talking about them and showing you the difference in them.

What I'd like to do is to continue on with the other two gentlemen who are with me, and perhaps, when the three of us are finished, there will be some questions that we can deal with, with the numbers or with this report that I showed to you.

And I'd like to introduce our next gentleman.

Al?

Al Poire.

CHAIRMAN CLUFF: Yes, Al. Before you start, we're on a very tight time schedule, so if you could keep it brief — including questions, we've got about another eight minutes to go.

MR. POIRE: Okay. Very good.

CHAIRMAN CLUFF: Including questions.

MR. POIRE: The display that Bill is going to put up on the overhead projector right now is simply a breakdown of the damaged structures according to how he described the major damage, destroyed, and minor damage.

(The following remarks were illustrated with an overhead slide transparency.)

MR. POIRE: Those are grouped according to Red Cross chapter areas, so it may not make sense at first blush. There are — the Golden Gate Chapter that's up there only holds San Francisco, the City and County, and the Marin Chapter is Marin and Corte Madera, and the different other chapters hold a variety of other cities. And if you're interested, I will be able to describe that to you.

Some of those asterisked figures have stayed the same for quite a period of time, but they do change when the client goes in to the service center seeking relief, because what will occur oftentimes is that one of the service center workers will go out to the home to assess the damage. And upon closer look, the damaged home may go from a minor damaged home to a major damaged home, and perhaps even destroyed, if, from the outside, the house looks like it's completely livable, but on the inside you can detect that the interior walls are destroyed, the supporting walls are destroyed. So, later inspection oftentimes changes these figures.

That's why we sort of waffled a bit and didn't make those final figures the final figures.

If there are any questions about those that I can answer, please ask. And now we'll have Ed Carroll discuss the Marina situation.

MR. CARROLL: Following my activities in damage assessment, I was assigned to the service center of Moscone Recreation Center. And at that location, we're dealing with the zip code 94123. So that — if you're familiar with that, that's the area in which our service center is targeting.

The figures you have up here, we're dealing just with apartment figures, apartment house figures, within that zip code. And starting at the top left, we have the number of destroyed apartment buildings in the Marina area, which are 52. In order to come to some sort of a figure of housing units, we arbitrarily picked the figure 6. So, we're just using that as a factor. That would give us 312 living units destroyed.

The number of people who have applied to date are 50. So, you can see we're running only about 16 percent of those people whose previous living unit was totally destroyed have come to the Red Cross for assistance at this point.

The figures below are for major damage to apartment buildings, and we have 111 in that category, which would give us 666, with 30 of those folks applying for assistance, or approximately 5 percent.

The — a comment, if I may, that I think is very critical — I had the opportunity to work the L.A. earthquake in a similar fashion, not in the damage assessment aspect, but in a service center. And what we found there and we're finding here, that there is a very critical link between Red Cross damage assessment and the local building officials' and the more detailed structural analysis that they perform.

We, you know, need that information at a very — as early as it can be released to our agency, so that we can make the appropriate changes, because that links directly to our serving the client base. A house, from the outside, or an apartment structure, may appear relatively sound on the outside, but there may be significant structural damage to that house which would not be apparent to us. And it makes a tremendous link for us to our client base if we have that information.

CHAIRMAN CLUFF: Open for questions.

Yes. Let me just ask you, in your experience, you've given these percentages of people applying for assistance. Can you give us some perspective on that? Is that low, high, moderate, and what do you learn out of that?

MR. CARROLL: Well, a national figure is about 20 percent of an area that's going to be evacuated, about 20 percent will go into shelters. So, about 80 percent of the people tend to shift for themselves, rely on their own family connections or relocate themselves, take care of their own needs. Here, we're even below that. Of course, we're not a shelter population we're dealing with.

We have been trying a number of methods of trying to contact the people and advise them. What it appears to me is that the people simply — in the — from the destroyed structures, have simply moved out of the area, are not available, you know, for our services.

CHAIRMAN CLUFF: So, the quality of the standard of living of people is such that they have — they're well connected and have the opportunity to make other arrangements.

Now, earlier this morning — and we've heard about the other social issue that we're dealing with, and that's the homeless, who have taken the opportunity of this to come in to this Presidio and have taken up housing in the emergency shelters in the Presidio. And we heard the general describe to us, while they were pleased to help in the emergency, this is something that they can't continue to deal with. And I suppose you people have a similar experience.

What's your advice to the City of San Francisco on — well, all of the Bay Area, on dealing with this homeless problem?

MR. BOMBECK: Well, I'm not sure we have any advice that's going to help. But our main mission, according to our charter, is to help with emergency situations, disaster relief. I don't think it includes the homeless, although we do work with homeless, of course. New York City has homeless shelters through the American Red Cross there.

This is a complicated issue, because every time — not just in this area, but when there is a hurricane or people are displaced by any kind of natural disaster, the people who are displaced are not only disaster victims, but also people who are suffering for economic reasons. They are victims before, and they are victims also during the disaster.

And when the disaster is over and the Red Cross finally meets all the needs of the people who suffer from the disaster, those people are still going to be in the community. I'm not sure that we or anybody else has any long-term solution to that, but it's not a new problem. It just seems more aggravated here because of the size of the earthquake in the first place.

But when you have your floods in Northern California — and I've been to a couple of those before — you have homeless people in shelters, and it's a problem there, and they were in the community beforehand.

No, we really don't have a solution.

CHAIRMAN CLUFF: It's certainly an issue that we need to get some good minds working on, because, in the long term, this is going to get worse, not better. And as we — as we as a Commission work harder to enforce greater seismic safety standards, this clearly has an economic impact on those marginal people. This is going to throw a lot of people out into the homeless area, and it seems to me like we need to really deal with this issue, because it's not going to go away.

And in some respects, it's a barrier to what we're trying to accomplish. And we're very sympathetic to that, but our role is to protect the lives of the citizens of the State of California from earthquakes, and we're appreciative of these other issues, but we can't be stopped by that.

MR. BOMBECK: Yeah. It's just — what happened just aggravates the issue that's already there.

CHAIRMAN CLUFF: Yeah.

MR. BOMBECK: So, I think whether — it just brings it to our attention, but it's always there. We're just more aware of it when there's a disaster, is what I'm saying, is we've got a long-term problem that is not necessarily connected to the disaster, that's just problem in the country.

I might make a point of something that occurred to me when you talk about a larger earthquake and the breakdown of communications and being able to communicate and get in touch with each other. I'm very concerned, I think, about the Red Cross being able to perform its function, and my particular function, even, without the use of many local volunteers. We're greatly dependent upon — what I do in particular — for local volunteers.

So, we're always saying that there should be more training in the local chapters. We need more people trained to be able to respond, because if we get someone who walks off the street as a volunteer to help us, we appreciate this and we use them. But if this person has training in what we do, they're ten times more valuable than someone who just responds to this.

So, I guess I could push for this all over.

I'm thinking sometimes — when I was a boy and World War II was on, we used to have air raid wardens in all the neighborhoods, and everybody in the neighborhood felt like this was important. And I know in places like Britain, in London, in order for them to survive, they had to organize themselves by neighborhoods. They couldn't wait upon the city government or the central government or Uncle Sam to come help them.

And I think maybe one of the suggestions I could make would be a better, stronger look at that kind of thing.

I'm also reminded of the way the Japanese have responded for years in their neighborhoods over earthquakes, where they organize themselves into neighborhoods. And I think if communications break down and if people can't get to each other, this is going to be very signficant. I know it would help us, in the Red Cross, if we knew that we could get reports, damage reports, from neighborhoods if they were organized in this manner. And I think maybe that might be something here. And I'm sure you've explored this many times, and I just would suggest that again.

CHAIRMAN CLUFF: Thank you very much.

Pat?

COMMISSIONER PAT: Yeah. A quick question, Bill. Just in case these figures are used by others, the numbers for apartments and condos destroyed, is that units or is that buildings?

MR. BOMBECK: No, those are — they were supposed to come in units.

COMMISSIONER SNYDER: Units.

MR. BOMBECK: The ones —

COMMISSIONER SNYDER: Okay. I just wanted to clarify that.

MR. BOMBECK: Yes. No, those are apartment units, not apartment buildings.

COMMISSIONER SNYDER: Apartment units. Thank you.

MR. BOMBECK: Those are individual units.

CHAIRMAN CLUFF: Any further questions?

Well, thank you very much for coming.

COMMISSIONER WASTE: Excuse me.

CHAIRMAN CLUFF: Oh. Bill?

COMMISSIONER WASTE: A quick one. But knowing your business is disaster, what's different about an earthquake?

MR. BOMBECK: Well, I probably ought to let Ed — this is Ed's second one. Al and myself, this is our first one. But one of the major problems we have is the very difficult time we have of assessing the damage. This is very difficult for us. It's much easier with floods, hurricanes — fires, of course, are not that complicated.

But because of the nature, we have all kinds of examples of buildings that look fine, when you look from the outside, but maybe the whole second floor has fallen in, and we thought it was a one-story building when we drive by and look at it, and we find out later it was a two-story building.

And as Ed has mentioned earlier, we depend upon the building inspection reports, because if they tell us that a building's condemned, we automatically assume that's a destroyed structure, because that means it's condemned and the people aren't going to live in that. And we would accept that on our verification for people seeking assistance, or into our numbers — we would add that on as a destroyed building.

But it is more complicated. It takes much more examination than we're able to do. We would like to be able to do an examination inside and walk all the way around the building and spend a lot of time trying to figure out just how badly it's damaged. But we are required by our policies to produce a preliminary damage assessment within 24 hours after the event. That's almost an impossible task. They almost made it here, by the way, not because I was here, because I wasn't here when that happened. But the local chapters did such a great job.

And our preliminary damage assessment is basically just to try to determine where the damaged area is and get an estimate of how many homes are there.

The estimate was way under, by the way, when they did this.

We're also required to do a detailed damage assessment within 72 hours after that. We didn't quite make that one, but we were fairly close to it. So, in order for us to get 500 to 600 damage assessors out to come up with these numbers within the 72-hour period, the only thing we can do is examine the outside of the structure and make an estimate of that. It's far from accurate.

CHAIRMAN CLUFF: One last question, Dan.

COMMISIONER EBERLE: Yeah. Following up on that, how close do these figures coordinate with the city or county figures?

MR. BOMBECK: There's no way we can tell with the current ones, because the city and county, of course, are still doing a lot of inspections, and we're still doing some damage assessment. So, I can't tell, and I wouldn't have enough information about the other two earthquakes, but it's an interesting question. And I would like to know the answer to that too, and maybe we'll, you know, do some research later on and come back and see how this plugs into this.

COMMISSIONER EBERLE: Eventually collaborate and try to get the figures?

MR. BOMBECK: Yeah. One of the — one of the problems is we don't necessarily use a similar kind of classifications. And one of the pleas that Ed made a minute ago was the need that we have for building inspection reports, because we really depend upon them. But what I've found, if we go from Santa Cruz County and go to Marin County or San Francisco, all the reports have great varieties to them. Each city does their own kind of thing. Some of them use red — the red tags and the green tags and yellow tags. Others give you very complex, detailed analysis. It depends upon the city or the county and the way they do their own inspections.

It would be great for the Red Cross if they were all unified, but I'm not sure that that would be a benefit to the cities. They do what they feel they have to do with their inspectors.

CHAIRMAN CLUFF: Well, thank you very much for coming before us today.

MR. BOMBECK: Thanks for inviting us.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: The next part of our meeting will be a presentation by Larry Kollerer and Oren Reinbolt, of the Presbyterian Hospital.

Welcome to our Commission hearing, and we appreciate your taking time to come and share your thoughts and perspectives. And I think you've probably been here long enough to understand the procedure. I won't go through it again.

MR. REINBOLT: Well, thank you for inviting us down here. We'll try and make our presentation brief and focus on answering questions in any particular area that you have a particular interest.

My name is Oren Reinbolt, and I'm the Vice President of Facilities at Pacific Presbyterian Medical Center. And for those of you that don't know, that's located up the hill here, on the corner of Clay and Webster Street in San Francisco.

In terms of our understanding of what you wanted to talk about, what went well for us — I think the bottom line, we stayed in full service. We did not curtail any services throughout the immediate after-period after the earthquake, and we were in business as usual the following day, and have stayed in business as usual thereafter. So, we feel comfortable with that. We're happy that that was the case.

And, in fact, immediately after the earthquake, we had far more medical staff and nursing staff on site than was needed to treat the influx of patients. So, we're real happy about that.

I wanted to talk a little bit — I believe we were invited down here to discuss some of the things that we did of a discretionary nature that may have contributed to that. And actually, it goes back to, I think, our history as an institution. We were designed in 1969 and were under construction in the 1970's, '71-72 period. And as you might expect, the earthquake in 1971 in Southern California caught a lot of people's attention, although it was too late to do a whole lot about our structure at that time.

The building opened in April, 1973, the main hospital building. And one of the first questions that was asked during that process was were we up to current earthquake code. And those of you that are familiar with these things in the hospital area would know the answer to that is no, we were not. We were designed to the previous code, and the code actually changed in '71. That caught the attention of our board, and our board spent a fair amount of deciding, "Well, what exactly does that mean?" I was part of that process of those discussions, literally from the 1973 period on.

We also have, by way of background, a management that has as its president a physician who was the triage officer for a year at an Army MASH hospital in Vietnam and understands the nature of what that entails as well. So, we had leadership at the top that was very interested in earthquakes, and a medical staff also that's interested in that.

That spawned a number of voluntary efforts that Larry's going to describe in a minute. And the basic genesis of those, or the basic category of those are voluntary anchorage efforts that were self-directed and self-funded, not in response to any particular code, but more out of a moral obligation to bring the capabilities of the plant in line with its structural capabilities.

The plant's structural capabilities, although designed prior to the '71 earthquake code changes, the hospital was designed for two additional floors, which were not added. So, we had a fair amount of extra strength just due to that, that and the fact that it was an interstitial steel frame building, and, by its kind of inherent structural nature, was a pretty solid building.

The other thing that I believe may have caught the attention of some people on the board was that about a year and a half ago, we undertook a significant voluntary structural upgrade of one of the buildings on our campus, which was the prior Stanford University Medical School. And once again, the board, upon review of that, decided that we had a moral obligation to keep that building in service or replace it.

We actually decided that the cost of strengthening it was not worth the money, and we had plans and went to the Planning Commission with plans to replace the building with a new building. Due to funding limitations and the economic environment for hospitals, especially in San Francisco and California, we abandoned the plans, temporarily at least, to replace it, and, in turn, strengthened it.

And what we have is kind of a unique thing where we voluntarily brought the building strength a significant way forward, but not in compliance with any current code. And as you might expect, that caught the attention of a number of people, because designing to no code is kind of a novel concept. Nonetheless, we were exempted from CEQA, we were exempted from the conditional use permit process of the City of San Francisco, we had all green lights, it was self-funded, it was entirely voluntary, and I think our return on investment paid off handsomely, I guess, looking back in retrospect.

I'm going to turn it over to Larry and let him tell you a little bit of the details, and then we'd like to answer any questions in either of those regards.

MR. KOLLERER: As Oren pointed out, the hospital building is a moment-frame steel structure with a poured-in-place concrete exterior around it, so that the review of the design of the building was the building itself would fare very well in an earthquake, but none of the mechanical equipment, none of the electrical equipment, none of the central plant equipment, including the generating plant, was at all addressed seismically.

So, in '81, we commissioned a structural firm, Rutherford & Chekene, to produce plans to go through an seismically brace and install stubbers on all our equipment, all the tanks, boilers, generators, and we more or less prioritized them. And we actually did this work in-house with a qualified welder and worked on it over a period of about three years. They produced the drawings and we installed all the bracing, starting with the central plant equipment, the generating equipment, and then working up through the building, doing all the transformers, the air supply units, everything up through the buildings, so that we felt, in a quake, we would at least have the essential equipment covered.

As time went on, we got into more of the less essential equipment, which would be the air supply units for the general patient care area. Eventually the cooling tower, which we could live without in a major earthquake, got braced. So, eventually, we just worked our way through the building and got it all done over about a three-year period.

We've also done a lot of major remodels during the years of this time. And at any time during a remodel, we upgrade whatever section of that building it is.

One of the few things — and we had basically zero damage in the building, with a few exceptions. And one of the more noted exceptions is, in our OB unit, we installed beautiful cabinets mounted to the wall and put a TV in these cabinets. Well, we didn't restrain the TV in the cabinet, so we did lose one television set. The other problem we had was a 1/2-inch water line broke loose, but that was the total extent of the damage, which is pretty minor, from what I've understood, of the other hospitals.

The things we are presently working on that we feel are of key issues to our hospitals is, our generating capacity is based on city water cooling, which is fairly normal, especially in the vintage of our hospital. And we've been grappling with how to solve that problem now, ever since '81, and we are in the design stage, and have been for about a year and a half, of installing closed-loop cooling for the generating capacity. Had the water supply been cut off totally in San Francisco, many hospitals, not only us, would have been in serious problems over water supply.

In the area of water supply, we've also researched the grid system in San Francisco and know where our — what water grid our hospital is in and what water grids are adjacent to our hospital. And we have sufficient fire hose to connect to adjacent water grids, which should help us in a disaster. But the problem of water is probably, from our point of view, one of the least handled issues in a real — in a worse earthquake, dealing without water would be a tremendous problem for all of us that we are working on, but there's a long way to go.

As part of the generator cooling, we are going to be putting in additional on-site water storage, so that should also help.

A little bit on the Stanford building upgrade. We spent a long time on trying to come up with a means of seismically bringing that building up to a greater level of soundness. And what we ended up doing is building concrete towers on the exterior of the building so we could fully utilize the interior space without interrupting the building. In a fully occupied medical center, giving up space for any type of upgrade is like pulling teeth. And so, the system we used was an exterior system.

On that building, which was graded as pretty much a collapse hazard, we suffered no damage at all, and we're about three-fourths of the way finished with that upgrade. So, we think that did have some value.

I don't really have anything else to add.

CHAIRMAN CLUFF: Okay. We'd like to ask some questions. Thank you for the information.

Dan?

COMMISSIONER EBERLE: You mentioned about your — if I understood, your emergency power generation is dependent on the water supply, and you think it's an area you need to do some improvement. Do you think that's a common problem area throughout the San Francisco area or throughout the whole hospital system?

MR. KOLLERER: I think it's common, especially in metropolitan hospitals. As you get out farther and land gets cheaper and generators can be set easily outside of a building, then the problem doesn't become quite so acute. But in San Francisco, where land is of high value, the generators all tended to be put down — in our case, our generator is 70 feet below ground. So, just dealing with the problem of how to cool this generator that's 70 feet below the ground, the easiest thing to do is put in a heat exchanger and hook it to city water.

So, there are several hospitals in San Francisco that have the identical problem we have. And we've known we've had the problem for a long time, and have been actually working on a fix for about eight years now.

MR. REINBOLT: Maybe I can add a couple comments to that too. There's a family of problems. The smaller hospitals, of which we have one at Garden Hospital over on Geary, near Masonic, those size generators tend to be self-contained, because of their relatively small size. They come as a nice, compact unit. It's the bigger hospitals that have the problem.

But there was a code change, and I don't know quite how far back. I know the new Children's Hospital addition is self-contained as well. So, a very recent hospital does not have these problems.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Any further questions?

MR. REINBOLT: I might just give you the magnitude — just a couple dollar figures that I threw out here, or did not share with you. The cost of cooling that generator is around $400,000, emergency cooling of the generator, to retrofit it. And we've been wrestling for years. We know that's about the best bang for the buck we can get. We've looked at numbers the size of $1.2 million.

The cost of the seismic upgrade of the Stanford building, the exterior bracing, was about $3.5 million. And once again, that did not bring it to 401(f) (sic) code. That was a voluntary upgrade to make a non-collapse hazard only, in our opinion. And we can't get a structural engineer to endorse that that's anything other than our opinion. And I don't blame them for that. That's what the code's all about.

The other thing is the voluntary upgrade that we did of all the anchoring of the equipment. We did take all that up to full state OSA standards, because we felt, if we were going to do it, we want it designed, we want it approved, and those were all stamped drawings, and we do that all exactly to the code, although we did the work in-house, the actual construction work.

CHAIRMAN CLUFF: Mr. Reinbolt, another question to either one of you. Earlier today we heard from Mount Zion Hospital about — they had an automatic shutoff valve function that turned off their gas and did inhibit their ability to continue to function. Did you have automatic gas shutoff? If so, what's your views on the value of automatic gas shutoff valves?

MR. KOLLERER: We did. It did not trip.

CHAIRMAN CLUFF: Oh, it didn't?

MR. KOLLERER: But had it tripped, we just would have switched to an alternate fuel supply for our boilers. So, our boilers are dual-fired, and it's not any big trick to go to the diesel-fired boilers.

MR. REINBOLT: I might add, though, in that regard, we do also have seismic switches on the elevator banks, and we had — the passenger elevators are all on one seismic switch. They all tripped out as a bank of four. And then, on the three freight elevators, we have a more — I guess you'd call it a cage containment switch device, three separate switches that track the counterweight. And one out of three of those tripped out, so we had two remaining freight elevators.

And once again, that was a voluntary upgrade, to go to that next level of elevator service. And that saved our day in that regard. So, we were real happy about that.

CHAIRMAN CLUFF: Thank you very much for coming in and sharing.

MR. REINBOLT: Thank you for the opportunity to come down.

CHAIRMAN CLUFF: The next part will be Peter Keane, San Francisco Bar.

Welcome, Mr. Keane. We're glad you could come today, and we're sorry we missed you the other day.

MR. KEANE: I'm sorry I missed you, ladies and gentlemen. Good afternoon. I had an emergency the last time.

CHAIRMAN CLUFF: Sure. We understand.

MR. KEANE: I'm sorry I stood you up, and I apologize for being late. I got stuck in the traffic down here on Lombard and didn't prepare it right.

In any event, my name is Peter G. Keane. I'm the president of the Bar Association of San Francisco, and I would like to present to you, as best I can, much of it anecdotal, the experience for the legal profession, for the courts, for the population of San Francisco in terms of the legal questions that develop among them, in terms of the functioning of the courts and in terms of the particular problems in regard to things like looting and other aspects of it, as we saw it.

First, I'll just outline for you our own resources. The Bar Association of San Francisco is an organization of 8,700 attorneys in San Francisco that has a long tradition that's been here for about a hundred years. We have a fair amount of financial resources, and over the years we have always applied a lot of those financial resources to pro bono activities and helping the public in regard to legal services for those who can't afford it.

We have a fairly good staff of people in our headquarters over in the Monadnock Building. So, we were pretty well equipped to deal with a number of things that the City asked us to deal with in regard to the public's legal questions when the disaster did happen. And some of the members of our staff responded to it very quickly.

One woman whose name is Tanya Nieman, who is a very effective administrator, she put together a panel of 300 attorney volunteers within two days, and they worked — they're still working at this time, and we have them available continually through the next few weeks to answer questions of the public.

We were in liaison with the Mayor and the City Attorney's Office, and the city attorney pretty much was fielding the public's questions to us and directing the public's questions to us. We had several trunk lines put in by Pacific Telephone to aid our functions of our voluntary panel, and within a few days we put out a — we were able to compile, with the help of many of the large law firms in town, a good number of publications which answered the questions of the public. And I'd like to leave them with you.

One was — this was called an "Earthquake Assistance" — "Legal Assistance Handbook." That was put together in about two days by Ms. Nieman and a number of attorneys from the firm of Pillsbury, Madison & Sutro and Morrison & Foerster, including a couple of the senior partners at Pillsbury, a gentleman named William Edlund, that we used the resources of Pillsbury to put this together.

And essentialy, this manual, "Earthquake Legal Assistance Handbook," and another one, this red one, called "Earthquake Relief Legal Assistance Training Manual, Federal Emergency Management Agency and Landlord-Tenant Issues" — we found that, because of the Marina, the bulk of the questions that were coming to us were landlord-tenant questions. Those were the big concerns of the citizens of San Francisco because of the disaster. That was 90 percent of the problems, 95 percent of the problems that came to us.

We also compiled a — as a result of that, we compiled a separate handbook, called "Questions and Answers on Landlord-Tenant Problems," which were germane to the earthquake.

I begin with talking to you about the — I guess what would be the biggest concern of all, when one would look at a disaster in terms of the legal system — Was the legal system functioning? Did it function well? Was the City's legal system functioning? Were the courts functioning? And the answers to those questions are all yes.

The Hall of Justice on Bryant Street, in which all of the criminal courts operate, that was closed for one day. That was closed on Wednesday, and actually, several judges did show up, several district attorneys did show up, several public defenders showed up. It was decided to not hold court session at the Hall of Justice that day.

Had there been a lot of activity, for example, had there been a lot of arrests of people, or had there been looting or vandalism or rioting, in my opinion, the skeleton staff that arrived at the Hall of Justice on Wednesday probably could have handled that.

In terms of looting, I can happily tell you that there was virtually none. It was an interesting phenomenon, in terms of the cases that hit the criminal courts. And I've talked to the criminal court judges about this. And you can — you can isolate about a handful of situations that one could perhaps tangentially call looting, in terms of some thievery that was connected to earthquake-related events.

Paradoxically enough, it was a much more peaceful time, and a much more crime-free time in San Francisco during those first couple of days after the earthquake than before the earthquake. Perhaps that's the answer to the crime problem, you know, have earthquakes on a regular basis. We'd become a much more placid society, although it's a rather extreme way of doing it.

But there were — as I said, there were only perhaps a handful, maybe four or five instances, that one could say were related to illegal activities that came from the earthquake.

There were some instances of price-gouging that occurred in some shops. Strangely enough, the price-gouging, as I've heard from Chief Assistant District Attorney Robert Podesta, was not in regard to particular types of commodities that one would expect after a disaster, milk, bread, butter, eggs, bacon, the essentials, the staples of life, but it was in regard to items like beer and cigarettes. Why that was occurring, I don't know.

Cigarettes were being sold in various little — and most of this was taking place in little mom-and-pop grocery stores — cigarettes were being sold for two or three times the price, and people were griping about that, and beer and liquor was — mainly in these little mom-and-pop stores. That was the main instances of gouging. You don't have people talking about having to pay Gold Rush prices for a loaf of bread or a dozen eggs. That simply didn't happen.

In regard to the civil courts in City Hall, which was damaged to a greater extent than the Hall of Justice on Bryant Street — the Hall of Justice had some cracks, but was really not in terrible shape — City Hall, as you know, took more damage than that, and City Hall was — the courts in City Hall were closed for two days, and some of them for three, until the end of the week, and some of the civil courts in City Hall really didn't get functioning again until Monday.

But the justice system as a whole was pretty much up and running within a few days.

In regard to the concerns of the public, one of the things that we found is that the laws as written, particularly relating to landlord-tenant type matters — as I said, that was the bulk of it — simply do not anticipate an earthquake. And questions relating to tenancies, for example, especially in a city like San Francisco, which is a rent control city, that had enormous impact upon what people's plans were having to do with their apartments.

For example, people who lived in apartments that were damaged and they were a little bit unsure of, they didn't know what their rights were if they moved out. "Can I get back in, or does this end my tenancy?" And then, "Can the landlord take it over if I — have I abandoned it?" And "I don't want to leave this place because I have a good deal here." It's rent-controlled. And also, many people were suspicious that landlords might use that as an excuse to say, "Well, the tenancy has been vacated," and the landlord's been waiting, probably for years, to be able to do that. So, it now has a non-rent — it has a situation where rents can be raised, because there is no vacancy control in San Francisco.

There were a number of situations in which tenants were wondering, since the service — some vital services were being cut off, like gas was not working — could they negotiate with the landlords for less rent? And in many instances, landlords, in the first few days, wanted to negotiate less rents, because they knew that less services were being supplied. But the landlords were afraid, if they did that, would the rents then be frozen at a lower level under rent control, because they opted for the less rent?

So, there was this problem between both groups. We were able to go before the Rent Board last week, and — I'll leave it with you — the Rent Board, at our request, amended the rent control laws specifically relating to the earthquake, and said that the board will honor any reasonable agreements made between landlords and tenants in which rent is temporarily adjusted or reduced to compensate the tenants for the current condition of their units.

So, in regard to those rental questions relating to apartments and things, those were the bulk of many of our questions.

The other confusion had to do with the color-coding of various buildings. And people were not sure — landlords in particular were not sure of what the color codings meant, and how they could get them changed, or whether just a letter from a structural engineer was enough, or "Will there be another inspection?" That was not — that information was not coming to the public very well, and it took us a little bit of time — our people a little bit of time to get that information out of the

City, because, as you know, the City was creating those color-coding schemes out of whole cloth to begin with, and really didn't know the answers to a lot of those questions. They were just making the answers up as they went along.

The other bulk of questions that came to us had to do with FEMA-related claims. "How do we go about making FEMA-related claims?"

There were — we were advising people that many of the insurance companies were saying that if you had an earthquake exclusion in your insurance policy, that was it, no matter what kind of damage you had. And we were concerned by that, because that was not true in regard to many policies. There would be other things in the policies that, by virtue of other clauses relating to fire or glass or other things, that even though there was a multiple cause, including an earthquake, claims would be covered under the policies, but that people were in danger of not putting in their requests for a claim within the 100-day period, and therefore waiving that. And we anticipate that that may lead to a lot of litigation in the future, so that was something that we answered a lot of questions on.

There were also — we had a lot of — I can only say this because of my lack of a better word — sort of — there was a lot of suspicion about FEMA that was engendered in the early days. And I don't know whether it's true or not. I can just tell you the things that were being said. This was sort of the mythology that was out there. And it was going — the word was sort of going — people were telling us, "Well, watch out for FEMA."

And again, I don't endorse this view at all, because I don't know whether it's true; I'm just passing it on to you, and I don't know whether — people were saying, "Well, we heard that in Charleston that FEMA really — they came in and they had a lot of high publicity in the first few days, and then they pulled out, and their mode of operation was that they seemed to deny every claim," that that was the way they were operating, as if they were really there to help people, and they got a lot of publicity out of it, but then the result — the proof of the pudding for the people in Charleston was that FEMA just said no to every claim.

So, we were a little worried about that. We didn't know whether this was true or not. We heard stories, for example, that in Charleston, FEMA had regulations that they would only pay on original invoices, and that — this is, again, one of the stories we heard — that about half of the claims, the applications that went to FEMA, somehow got lost with the original invoices. And then, when people attempted to back up the claims later on with Xeroxes, FEMA said, "Oh, no, no, no; we only take original invoices."

So, we didn't — you know, we didn't — we couldn't vouch for the authenticity of this. It sounded a little extreme, but we were having — hearing this, you know, from various people. We were — we were cautioning people, you know, "Dot every 'i' and cross every 't' in dealing with your FEMA applications. Make sure you get — if you can get two original invoices, get two original invoices. Make sure you keep copies with everything. And you have to deal rather judiciously with them."

So, I don't know whether or not we were being over-cautious or not, but that was — that was sort of the common wisdom that was — or the rumor mill that was going around about FEMA. Well, there was a lot of this suspicion, and sort of "Watch out for them." And I don't know whether they were taking a bum rap or not. I hope they — I hope they are — they're not? Well, that's too bad.

But, in any event, we did caution — we did caution the public in regard to it, to make sure that they got their claims in and do everything — do everything on a worthwhile basis.

That's essentially the extent of what I can — what I can present to you, ladies and gentlemen. I will leave these manuals and a copy of the rent control ordinance that we got amended, with you for your consideration or part of your record, or for anything that you feel you want to do with them.

CHAIRMAN CLUFF: Well, if we could ask you to stay and respond to a few questions.

MR. KEANE: Sure.

CHAIRMAN CLUFF: I have several I'd like to start off with.

MR. KEANE: Certainly.

CHAIRMAN CLUFF: You mentioned the point of crime and looting and seemed surprised that there wasn't any, or very little. Let me just share with you my experience. This is my 23rd or 24th earthquake, having experienced some directly, including Mexico City. That's common. Earthquakes, for some unknown reason, create an atmosphere where people want to help each other. And you rarely observe crime and looting in earthquakes.

I hope that continues and, I suppose, if we keep having a lot more earthquakes, that might change. But I was amazed in walking down the Financial District, with all of the shops' windows broken on the street floor, no policemen around, computers and all kinds of things that anyone could have walked in and taken, people were walking by and just looking. No one even attempted. And that was true in Mexico City.

A question I have has to do with the Hall of Justice, City Hall, and other types of buildings. And it gets into some legal and professional judgments that have to be made having to do with the level of earthquake risk that we're willing to accept. And let me describe to you, and then I'd like to ask your views and opinions about this.

There's no such thing, of course, as absolute safety when it comes to anything, and particularly earthquakes. While technically we could, if we spent enough money, make things to the point where it would be an exciting experience rather than a disaster, it's really not economically feasible to achieve that kind of earthquake resistance. But we need to go as far as we can.

And so, it's our goal here at the Commission to try to help surface these issues of the process of deciding what level of earthquake safety can be achieved and afforded. And that standard may vary throughout, say, the City of San Francisco. We know that we have a number of buildings in the city, City Hall, the Hall of Justice — most of our state-owned buildings are very vulnerable to earthquakes. Some are collapse hazards — not some, many.

We've heard testimony here yesterday and here today, and in our past hearings since this earthquake, about the decision process that's looking at those buildings, not from the standpoint of this earthquake, because we were 100 kilometers from this earthquake and it wasn't a test of those facilities. But nevertheless, here are a class of buildings — some of our buildings on the campuses, some of the buildings here in this city — that have been evaluated and are judged to be very poor in terms of their seismic resistance.

And so, what happens, then, is that someone has to make a value judgment on whether or not they're safe. There's nothing that's absolutely safe. And so, what's your views on how we can improve our ways of consistently making good judgments and making sure that we get a buy-in once those are done, so that in hindsight, when a building is damaged or people are injured and so forth, that we're not just overwhelmed with legal questions that just tie us up in knots?

I mean, is there some way that we can manage this in a better way, and maybe we will learn out of this earthquake?

MR. KEANE: There is. There is. And I've been thinking about that, and we've been talking about that among lawyers in town.

It would not be a difficult thing for this body or the governor or whoever to request of the State Bar of California to put together a model disaster code. And what I mean by that is that there are model penal codes, there are model business codes, there are model tax codes, which — in which the State Bar of California was called upon to establish a committee — it has the resources, it has the members, it has the staff to do it — to address questions that are particularly germane to legal issues that arise where there is a major disaster, comprehensively address them.

And I think it's — it is something that we could do, it is something that we should do. And I would — I would urge this body to suggest that it be done, that there be a comprehensive model disaster code dealing with statutory provisions of all of our laws that might be impacted by any type of disaster, and particularly an earthquake, but any type of disaster, where various — where this model disaster code would, in effect, click into place in the event that there was a disaster, or that the governor deemed to be a disaster, or someone deemed to be a disaster, or by virtue of whatever, whatever event it is a disaster, in which various provisions having to do with landlord and tenant, having to do with prices by merchants could be frozen to make sure that there was no gouging, even though there wasn't any here, to make sure that any other types of situations that are not — that are not appropriately dealt with by the regular body of our laws be addressed in the event of a disaster through this model disaster code.

CHAIRMAN CLUFF: Well, yes, thank you. And we're very happy to work with you and others on the emergency. But I'm talking about another part of that, and that is, in a few months or maybe a little bit longer, people will forget about this earthquake, and we'll get back to the old, nonchalant taking no action, when we know there are collapse hazard buildings. There are thousands of them in the City of San Francisco alone. We know, when we get the earthquake that's coming — it's not "if" it comes, it's "when" it comes — and it may be here any day — they are going to collapse.

Now, there are those individuals who have already made a judgment they're safe. Now, that's not all of them, but some of them. And we heard testimony yesterday about some specific buildings in Berkeley that, even though those individuals have considered the engineers' reports and so forth, they have looked at the risk of driving on freeways and so forth, and they've made the comparison. They say, "Oh, that's about the same, that's acceptable; the buildings are safe," and so people are still occupying those buildings.

Now, what our — we are charged with by the legislative bodies to develop a policy for the State of California, for the governor and legislature, on this whole issue of acceptable risk. That's — we've got to do that, and we'd like to solicit your help to help us work our way through that —

MR. KEANE: Sure.

CHAIRMAN CLUFF: — so that once we establish — it will probably be a series of policies, or different parts of a policy — you can't apply a policy to a critical facility in the same way that you apply it to a single-family dwelling or another type of house.

So, what can you say about this process of making these value judgments? Someone needs to be accountable for making wrong judgments.

MR. KEANE: Yeah, I can — I think I can address that in terms of what you're saying. Essentially, what you're saying is that there are a number of structures that may well not be safe, but we're about to go back to our old business-as-usual cavalier attitude. And obviously, we cannot do that, because of the risk to life that's involved.

And the only way that I could, off the top of my head, suggest to you what might be done in this situation —and the law deals with it in terms of presumptions and burdens — and that is that one put a heavy burden, a very heavy burden, upon someone claiming that a building is safe, that — where there is any question at all that it is not safe.

The law has different burdens of proof. For example, in a criminal case, you have to prove someone guilty beyond a reasonable doubt. Maybe there is enough emergency in this situation that if there's any question about a building, that the planning commission or whoever has to be satisfied beyond a reasonable doubt that that building is not safe. And if there is any reasonable doubt on the part of the members of the planning commission or whoever, the building should not be occupied. That, to me, does not seem to be too high a price to pay to save people's lives.

If the standard is going to be, "Well, you" — to use another legal term — a preponderance of the evidence, that is, if we're looking at it and the scales sort of tip 51 percent in favor of it being safe, but at 49 percent it isn't safe, because the scales seem to tip 51 percent, "Well, we're going to operate, we're going to allow people to go in it." I think that that would be a horrible set of affairs to allow, and a very dangerous and a very irresponsible set of affairs.

So, I think our civic officials should be held to a very high standard of proof, and a very high preponderance — or very high presumption. And the presumption should be against occupying any building that there is any doubt, any reasonable doubt that it is safe. And I think those kind of presumptions can be set up.

In terms of what you were telling me a moment ago, that troubles me very much, if we're going to go back to, "Well, if it's — if it's a toss of the coin and it may be or it may not be, well, heck, let's go ahead and occupy it," to me, that is a horrible, horrible way of putting the fate of the lives of our citizens in the hands of probabilities that are simply unacceptable.

And I think, under the law, in terms of suits for negligence, negligence in terms of holding someone liable for violating a duty to someone and the person being harmed, like driving your car too fast or not — or putting — allowing your street to be slippery outside your steps, there, if there's any kind of probabilities that you're going to cause any danger to someone, and if there's any reasonable probability that you are causing any danger, you're going to be held liable.

And so, I think the municipal authorities, the state authorities, should hold all buildings to a very high burden of proof, that they are indeed safe. If there's any questions, those burdens should not — those buildings should not be occupied.

CHAIRMAN CLUFF: Thank you. Well, we'd like to solicit your continued help to work with this body to wrestle with these policy issues that we need to put together, and we'd like your help in doing that.

MR. KEANE: I'd be happy to do it, and I offer you the assistance of our association, in any way that we can help. We will put our association at your disposal in terms of any resources that we have, or legal opinions or advice, or anything that our staff can do. We'd be happy to help. We'd be honored to help.

CHAIRMAN CLUFF: Thank you. Are there other questions from the commissioners?

Bill?

COMMISSIONER WASTE: Just a brief one, Mr. Keane. Occasionally, going from "A" to "B," I find myself listening to the radio in the car. There's a program that you may have heard called KCBS "Call to Action" —

MR. KEANE: Yes.

COMMISSIONER WASTE: — in which advice is given to people with trouble.

On the day before yesterday, there were a lot of questions from people in the Marina, just about the subject of your book. I would urge you to send a copy of that to KCBS.

MR. KEANE: Actually, we have. We've — we got in touch with KCBS pretty early on, and we told the woman, Barbara — Barbara Kaufman, about it. And I think in the first few days, they were referring people to us, but then, somehow, they stopped.

And we solicited them to refer people to us and to make — and to make it very clear that, you know, this is free legal advice, no one's charging for this, and that no one is — you know, these aren't lawyers looking for clients. In fact, these volunteers are specifically prohibited from getting any kind of benefit for it. We would look very much askance if someone — if any one of our volunteers wound up signing on someone as a client, and we would consider that an ethical violation and take that person before the state bar.

And so, we had KCBS announcing us in the first few days, but I think they sort of tapered off after that. And as a — we had many people call in as a result of KCBS referring them.

CHAIRMAN CLUFF: Other questions? Will?

COMMISSIONER PEAK: You mentioned recommending a state bar disaster plan or code. Along that line, with these publications that you have either updated or amended, would you plan to keep those in that state from now on, so that they would be available in some future disaster?

MR. KEANE: Oh, yes. We have — these will be at our association. They'll be in our archives. And we have — we printed up about 2,000 copies of these, 2,000 or 3,000 copies of these, and we distributed them to the public and to various agencies that have asked for them, and we've given them to anyone who's come by, the large manuals, about 2,000 or 3,000 copies. And the one on questions and answers on landlord-tenant, I think the Pillsbury firm, they printed an enormous number of these, and these went out to all sorts of people.

COMMISSIONER PEAK: Those might have to be updated periodically.

MR. KEANE: Yes. Yes. And they could be, quite easily.

COMMISSIONER PEAK: And is there any need for those to go bilingual?

MR. KEANE: There's a great need for them to go bilingual, especially in the event — it didn't happen this time, but, you know, had there been a collapse in Chinatown or the Tenderloin, where there are a lot of Southeast Asians who do not speak English, had the Mission District been hit hard, where you have an enormous Hispanic population that doesn't speak English — and one thing about the Marina District, it was mainly an English-speaking population there. You did not have — you didn't have the problem of language.

But that would not be true in other areas. That wouldn't be true in my neighborhood, out in the Richmond District of San Francisco, where there are a lot of Asians, many of them who do not speak English. If you'd had the same types of damage — there was a pretty good amount of damage out in the Richmond District, where I live, but nowhere near like the Marina — small amounts of damage in foundations — but if you had had the type of situation that one had in the Marina out in my neighborhood, you would have had a lot of people with a lot of questions who would not be able to express those questions in English.

So, they should be available in Chinese, in Tagalog for the Filipino population that lives along the City's southwestern edge, down by the Cow Palace, and in — certainly in Spanish.

CHAIRMAN CLUFF: Other questions? Pat?

COMMISSIONER SNYDER: Yes, just a quick question.

Would the books be transferable to other jurisdictions, or are they specific to San Francisco only?

MR. KEANE: No, they would be — they could be used in any jurisdiction in California.

And also, in terms of the questions — the information that we put together relating to FEMA, that could be used anywhere in the country. The red part of it — half of it has to do with information that we got regarding FEMA and the ways that FEMA processes claims, and how you put in a FEMA claim, and what sort of things one should look to.

And also, the questions relating to insurance that we had in one of them — let's see — well, there's a couple — in fact, there's a couple of manuals I didn't even tell you about.

Besides the landlord-tenant one, we put together "Questions and Answers on Insurance Programs." That had to do with people just putting in claims for insurance, with their insurance. This would be transferable to anywhere in the country, because it goes into the standard insurance policies of the national companies. So, I would certainly refer you to that, if you need something that would be very helpful anywhere in the country in regard to this type of activity.

And as I said, I'll leave all of this with you.

CHAIRMAN CLUFF: Well, thank you very much, Mr. Keane. We appreciate it, in your busy schedule, to come, and we look forward to some collaboration in helping us work through some of these legal issues.

MR. KEANE: Thank you very much. It's been my pleasure, and I would like to congratulate you on these hearings. I think you're doing a fine public service by holding these hearings at this time, while memories are fresh, and having held them last week.

I was in a meeting with the Mayor the other day, and apparently he wasn't aware that these hearings were taking place. And I told him — I said, "Look" — he was — there was a meeting in the Mayor's Office on Monday, and he was brainstorming about the earthquake, and he says, "What should — the things that we know and we should do?"

And I said, "Well, there's this group called the Seismic Commission and they're holding all of these hearings out in the Presidio, and they're getting all of this information while it's fresh in people's minds. At a minimum, you should get that. You should get the transcripts of those hearings or get the minutes of those hearings, because in a couple of months from now, many of these things that we're talking about, they're going to be gone from our memories."

And it's — I think it's great that you're doing this while the memories are fresh.

CHAIRMAN CLUFF: Thank you very much.

MR. KEANE: Thank you.

CHAIRMAN CLUFF: The next part on our agenda is Larry Meredith, the San Francisco Department of Public Health.

Again, welcome to our hearing. Our purpose here is to glean as much information as you have in terms of what worked, what didn't work, and how we can work together to improve our ability to deal with seismic safety for future events that we know have the potential of being a lot worse. And so, we're here in a friendly environment, to cooperate and work together and put this on the record so that others can use it in their proceedings.

MR. MEREDITH: Thank you. It's a pleasure being here. And again, I think this is an extremely important public service, to, while memories are fresh, collect the information and help us for the next event that may occur.

Would it be helpful to — I'm just wondering out loud how the information would be best presented to you, in terms of the sequence of actions that were — that the Health Department went through, or do you want specific issues that we found problematic, or —

CHAIRMAN CLUFF: We would like to focus on issues that have to do with seismic safety that we as a Commission can help with the governor and the legislature's activities, in terms of resolving some things that didn't work, or reinforce things that do work, and so forth. So, if you could focus on the issues out of your experience, it would be very helpful.

MR. MEREDITH: Okay. The number one problem that first addressed the — that the Health Department had to first address was with its — in San Francisco — well, maybe I should describe the range of services that are administered by the San Francisco Health Department.

It includes the ambulance system. We have both the — operate the largest ambulance system in the City and County of San Francisco, and operate the Emergency Medical Systems Agency. We have a major acute hospital, San Francisco General. We have a long-term care facility, Laguna Honda Hospital, with approximately 1,000 patients. We have a community mental health system which includes substance abuse and forensic services, the provision of health care services for inmates in the jails, and the full array of traditional environment health and toxic services.

At the time of the — or shortly after the quake, the problem was that although electricity was lost and communications were lost, and so there were tremendous problems in assessing exactly what the damage was and what hospitals were in operation and dispatching our ambulances, and then moving to an integrated response plan, which is a coordinated effort between the San Francisco Health Department's ambulance fleet and the private ambulances in the — San Francisco, and then, beyond that, to a regional plan, where we have a coordinated plan with the Bay Area counties — all of those were made problematic by our lack of — the lack of telephonic communication. We were able to use the Hear Net radio system between the hospitals, although that needs to be re-evaluated, along with our coordination with fire and police.

The lines became extremely busy and unintelligible, and it was very difficult to dispatch the ambulances to the scene. So, that is something that we're in the process of working out, and I don't know whether that's just a local issue or something that is more generally important.

Fortunately, there's a close working relationship between the paramedic, the fire and police, and there is this coordinated response plan that is well developed, and it served us well.

We're also fortunate that the Health Department had just been revising, in September and October, its own disaster preparedness plan, and so it was fresh in our minds. And that's not always the case. And it's my sense that the state may play a role in having counties in some formal way re-evaluate and update their disaster preparedness plans as a contingency on funds of one kind or another from the state, but to build this in as a regular procedure for actual implementations of the plan, and dry runs, and updating the information.

Let's see. The phone system, identification — something that caused a real problem was the fact that we wanted to dispatch health care workers to some of the scenes of the disaster, but because there were police barricades around the areas, they could not get in through the barricades. They didn't have identification that would enable them to move into the scene and provide service.

A number of us had the photo ID's from 1984, when the Democratic Convention was in town, and that was something that was needed in order to develop a response plan for that activity. But anyone who had been hired since then — and there had been many changes — did not have the identification. And so, that was a real limiting factors.

The only vehicles with lights and sirens are our ambulances, so the Director of Public Health and other physicians that may have been needed at the scene of an incident were unable to get there quickly unless they rode in the ambulance.

And so, we're looking for a way to have an emergency kit in each of our vehicles. And we might want —I mean, it might be something that could be pursued on a statewide basis, that all vehicles can have in them a disaster preparedness kit, with everything from first aid supplies, water, radios that don't need batteries, lights, the things that became necessary in the city within minutes after the quake.

In our buildings, we were very fortunate at the hospitals and really, throughout the Health Department in the city, that our facilities, while sustaining some cosmetic damage, did not have any major structural problems. No patients, no staff were injured in those structures, and they were all operational following the quake.

The emergency power systems kicked in, as they were designed to, but we had never tested them for as long as they needed to go on the Tuesday night. And so, our emergency generator at our paramedic dispatch station started to overheat. We didn't have sufficient diesel on hand, and were able, through the Department of Public Works, to obtain that. But it was — it might be more adequately anticipated.

The other thing, our emergency generator — it must have been a design flaw at the beginning — it didn't have the air conditioning for the dispatch. It just had the actual radio dispatch center and the lights immediately around that cemented operation, so the fuel tank that was outside to enable the vehicles to have gas was not wired in to the generator, nor was the air conditioning. And it became incredibly hot, and we had to go — since the electricity was down, we had to make special arrangements for fueling our vehicles.

So, these are some of the things that we, never having had a disaster of this magnitude, had not really had the opportunity to experience these. Usually, it had been in a four-hour period during the day that we had our disaster drills, much different, I suppose, at 5:04, and within a couple hours it was dark outside, and the problems were severe.

Each site needs an emergency plan. We have our administrative offices, along with a variety of clinical services, in the Civic Center, at 101 Grove. And as luck would have it, a fourth-floor hot water main broke in the ceiling of the fourth floor, and while we turned off the water downstairs, which we thought was the main water valve, but in the Civic Center, the hot water system is totally independent, run off a steam system on the other side of — the opposite side of the Civic Center, and no one knew where the shutoff valve was for the hot water, which also heats the building.

So, this continued to run for approximately ten hours, and did substantial damage to the interior of the building.

Well, identification, communication, disaster kits, fuel supplies, emergency generators, and battery-operated emergency writing in the interior of buildings. We had — in our health centers and in the whole array of health care buildings, where patients are seen on an out-patient basis, we had not adequately attended to. And so, people were trying to find themselves out of — find their way out of buildings in the dark, and that was less than ideal.

The coordination of plans, again, with the other City agencies — I think that — we are still working with FEMA and the Department of Public Works to assess the full damage to the buildings. We were surprised and most appreciative that our buildings fared as well as they did, particularly the Laguna Honda Hospital, which was built in 1926, and is of a very — we've had questions about it, and had seismic surveys done, and the bond issue that passed yesterday is the first step in doing some work at Laguna Honda to improve its condition, should it experience another seismic problem.

I'd be happy to respond to questions, if there are any.

Let me — I'm sorry — the one other thing. There are approximately 700 casualties, individuals injured and brought to San Francisco hospitals, as a result of the earthquake, and of those, 120 required hospitalization. The remainder were treated on an out-patient basis, and there were 13 deaths attributable to the earthquake in San Francisco.

So, I think our systems were able to respond very adequately to the magnitude of the problems, and all of our hospitals were in operation following the earthquake and able to receive patients. And we set up in a citywide disaster center, co-located with the police, fire, the mayor and his office, DPW, so there was one command center. And that was extremely useful, to be able to share information rapidly.

The other — the other thing that was extremely useful was having a television set there, because the electronic media provided a great service, as the phones were down and communications were just loaded, that the main vehicle for learning what was going on was through the television and radio.

I'd be happy to respond to questions.

CHAIRMAN CLUFF: Thank you very much.

Questions from the commissioners? Bill?

COMMISSIONER WASTE: Did you have any coordination set up with the private health facilities, so that you could cooperate? In other words, I'm thinking of the — if the next big one comes along, we're going to lose a couple of facilities operationally, and it would be very important at that point to have an organization so that they could cooperate with and trade with and move from "A" to "B," and so on.

MR. MEREDITH: We have what's called a Hear Net radio communications systems among all the hospitals. So, one of the tasks that, along with — while we're dispatching ambulances, you need to know where you can — once they pick up the injured party, where they can deliver them, what hospitals are up proximate to the incident. And so, what we had at the main command post is this Hear Net system that enables us to check with all the hospitals. We would let, then, the hospitals know from one another which was operating, so everyone shared the same information, and we have that system well established.

And I was at the central command center, and it was functioning well, so we could keep posted, for everyone's information, who — which hospitals were able to receive what kind of patients. And it seemed to work extremely well. And this has been coordinated, along with our work with the other ambulance companies.

And we also found that — and were using the media for physicians — many physicians and health care practitioners were interested in volunteering their services, and so we set up a central command post for the Health Department at Laguna Honda. Unfortunately, our administrative offices were — the power was out, the phone was out, and moss was starting to grow at it. So, we established it at Laguna Honda Hospital, used the media to get the word out to employees and others who may wish to volunteer, and so they could contact us to be informed of where volunteer services might be useful.

CHAIRMAN CLUFF: Other questions from commissioners?

Let me ask a question that's come up with other health facilities, hospitals and so forth, the gas shutoff valves. Do you people have those installed on your facilities, and if so, did they trigger, and if so, did that cause a problem, or what's your experience?

MR. MEREDITH: I'm quite certain that Laguna does not, and that's a part of its seismic safety activity that was just passed through the bond issue, to not only put flexible joints at the installation to the hospital, but also to make sure the latest in shutoff equipment is available.

At the General, I really can't answer you. I don't know whether they had an automatic shutoff. I know their generator kicked in and everything was going fine, and there was really minimal disruption to the patients.

I might add, one of the aspects that I didn't mention, but was critically important, particularly at Laguna Honda Hospital long-term care facility — patients have been there for many years — to have a disruption of this magnitude, many of the nurses came in, although they were off shift, and we had groups and discussed with patients what was going on. So, there's a lot of attention paid to the psychological needs of the patients who had experienced this event.

And then, subsequently, we have a very active employee assistance program. The program canvassed key emergency response divisions to see where they could be useful in debriefing and providing support services, in either an individual or group setting, to help people deal with the stresses in some of the activities that they had been involved in. And this was true in the mental health system also.

As you know, we had a number of shelters, and they moved from one place to another. And because there was a significant disruption of our single-residency occupancy hotels — I think approximately five or six went down, which displaced a number of people — we had our mental health and substance abuse counselors working with the Red Cross at the various shelters to make sure that people who had been coming to grips with some of their problems were making it in independent living, could maintain the gains that they had established.

And so, that seemed to work extremely well. And clearly, many people who were homeless prior to the earthquake were also utilizing the shelters. And so, we wanted to — we had our homeless health care team also dispatched there, and that coordination, I think, was able to minimize the health consequences of the disruption that people felt in their lives.

But this post-traumatic stress, I guess, is very important for patients and for staff, and we can't underestimate it.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much for coming and sharing your thoughts with us today.

Mr. Browman, you've been here for a long time — where is — yes. Would you mind if we allowed the next person that's — Lucy Johns needs to get in and out. You've been very patient here waiting for your turn, but — so, with that permission, we'd like to ask Lucy Johns, a volunteer at Moscone Center, to come to the table and tell us about her experience and how we can, as a Commission, help facilitate greater levels of seismic safety.

Thank you and welcome.

MS. JOHNS: Thank you. Thank you for taking me out of turn.

Let me correct, for those of you who do have this list of speakers — I was a volunteer at Moscone, not at the Marina Middle School, and I would like henceforth to be addressed as "Ms."

Now, as for my remarks —

CHAIRMAN CLUFF: "Lucy"'s all right?

MS. JOHNS: "Lucy" is fine among friends.

I prepared these comments for BAREPP, where I presented them last week and was invited to come here before you today. I'll try to sort of spontaneously summarize at the end where I think a state-level entity might get involved here. But do keep in mind that I was talking initially to a local body.

My name is Lucy Johns. I've been a resident of California since 1962 and of San Francisco since 1973. I was fortunately spared any serious effects from the earthquake, so I had energy and inclination to volunteer on Friday, October 20, to try to help some of those not so lucky.

My experience at Moscone Center, a shelter set up by the Red Cross for the displaced of the Tenderloin downtown area, brings me here today. My observations derive from a six-hour uninterrupted stint at the so-called information table, the primary point of contact between officials of any sort and the homeless not occupying the vast underground space so generously provided by the center.

Since I'm here to raise some questions, let me first compliment the Red Cross for the hundreds of cots and free meals they so plainly mustered to supply this population with absolute, basic necessities. Two meals were served during my shift, so I know that people ate. What I want to bring to your attention are elements that an average, thinking person would include within the concept of disaster assistance, but which I found lacking at Moscone by Day Three post-quake.

The first is a basic information and referral service. I was trained to take over the information table by a street-smart young black volunteer who told me he made a living imitating Prince, Michael Jackson, and similar others, and that I was not to use the microphone for any purpose except to page missing children and to call people together for meals. He did not tell me how to answer any of the following questions, which came in a constant stream:

"Me and my two kids was kicked out of our room because of the quake. What do I do now?"

"The post office where I get my SSI check is closed. How do I get it?"

"I need some GA" — this was not a question.

"I don't have no shoes" — her feet were bare. "Where can I get some shoes?"

"They won't let me into my room. I need to get my stuff. How can I get into my room?"

"I hear they're going to move us soon. Are they? Where to?"

"I hear there's money for us if you lost things. How do I get it?"

"I'm pregnant. I feel awful. Do you got something I could take?"

Questions like the last, I sent to the first aid station, but the others, which recurred over and over, I could not respond to. People had recovered sufficiently by Friday to be thinking about their next steps. I could not help them, and neither could anyone else there.

The second missing element is more abstract. I'll call it ability to receive offers of aid other than money. As the person a casual observer would have thought was in charge down there, I received steady offers of aid:

"I have clothes; where should I take them?"

"I have a plush 12-seater van unscheduled until three o'clock; can I take anyone anywhere?"

"I have a mobile communications van upstairs; do you need to contact anyone?"

"I want to volunteer."

"The post office is hiring people for Christmas; tell them to go down to" — dot, dot, dot.

"I'm from the Chinatown XYZ agency. We have two buildings you can use. They'll sleep maybe 40 or 50 people."

This last offer I thought sufficiently interesting to pursue with the top Red Cross official there, a harassed individual who appeared occasionally in front of the information table. I eventually got his attention and asked whether he would like to talk to the bearer of this news about places to sleep. He answered, quote, "Housing is not my concern; I can't possibly focus on that," unquote, leaving me, a perfect stranger to all this, to deal with the agency representative.

There should have been someone at the street entrance to Moscone with the authority and connections to screen and utilize all these offers. All I could do was beam and say, "Thank you."

The third missing element would have rectified the previous two, had it been present: someone in charge with the authority and back-up resources to address all the problems and opportunities likely to arise in such a situation — not solved, certainly — no one could expect that, but at least addressed. I saw only three people present at Moscone all that day who could make any decisions at all, and two of them were clearly minions, while the one top official, as noted, was only concerned about certain restricted topics.

Thinking about these missing elements since that day, it seems to me that the Red Cross is not the problem. The problem is that the Red Cross seems to be in charge, when, in fact, it should not be. Its mission is cots and calories. It does not take long after a disaster, however, for Americans to demand a lot more.

Earthquake shelters should not be Red Cross shelters. We need a "Start-Again-Now" division, "Under Pressure," "Stand Up," or some such civic, comprehensive, all-purpose authority in which the Red Cross is one player among all the others whose resources would be needed by any population when it comes time to pick up the pieces.

I left Moscone wearing a Red Cross patch on my sweater. People on the street nodded at me. A lady drove up and said she had three cars worth of sleeping bags to donate, where should she take them? The Muni driver waved me onto the bus, no fare necessary. I was very proud to have been part of the Red Cross for one day, and everything I've said here is intended to be, and I hope will be heard as, constructive.

Thank you.

CHAIRMAN CLUFF: Thank you very much, Lucy, for that information.

And we will take it as being constructive. We know of a lot of other examples of volunteer activities where we need constructive comments.

And I would like to ask the commissioners if they have any questions.

VICE-CHAIR RIORDAN: My only thought would be, have you made — I know you've spoken to BAREPP and now you've spoken, of course, to us, the Seismic Safety Commission — is there perhaps another organization that you might be speaking to? And I'm not sure. And I'm looking over sort of Pat Snyder, who may know. I don't her reaction, if there is an opportunity, or somebody that she ought to be speaking to besides the Commission and BAREP as it relates to — I don't know — if there's an emergency services department within the city, perhaps.

COMMISSIONER SNYDER: I'm not familiar with the responsibilities within this city, so I don't know who it would be.

VICE-CHAIR RIORDAN: I would suggest maybe calling City Hall and asking if there's an emergency services department.

MS. JOHNS: Well, I might observe that — I watched the mayor and listened to him quite closely during this whole event, and was quite impressed and relieved at his apparent ability to take charge of things. Basically, the reason I'm bringing all this up is that the structure for taking charge is not clear to me. Is the mayor supposed to do that, and then everybody takes orders from the mayor, including the Red Cross? Or does the Red Cross operate autonomously and independently whenever a problem occurs, and they just sort whip in and out, regardless of local civil authorities?

I mean, I just have no idea where all — how all this works, and I'm encountering it for the first time. And it seems to me as a citizen that there's no doubt that the Red Cross has a role to play, but it seemed to me insufficient to have the Red Cross be in charge of these shelters, where so many people had so many problems that the Red Cross was either not equipped or had no inclination to handle.

COMMISSIONER SNYDER: I don't believe that any chapter is adequately equipped, staffed, or trained to deal with an emergency of this size, based on the fact that we are a volunteer organization. And many of our volunteers were victims — our regular, ongoing volunteers were victims themselves or had, you know, other problems.

I'm not trying to make any excuses. But having come up here from Southern California the day after the quake and seeing what the organization and others were faced with, I just have to say that it's something that does happen in every disaster. There's just not a way to get a handle on it in those early days. I don't know of any other way to explain it.

I think we heard from the damage assessment folks that they were required to have a damage assessment done within 24 hours, and another one with 72 hours, so your resources are spread so thin over so many areas, and communications were either — you know, between shelters and coordinating points, were either nonexistent or very poor.

So, there's just a whole lot of things that go on in a disaster, and I'm very appreciative of your remarks. I don't know how we would solve them, other than to have a manpower source of — like the fire department — of several thousand people on staff 24 hours a day to respond to these things.

CHAIRMAN CLUFF: But I'm sympathetic to Lucy's concerns. Here she was, the well intended person that certainly provided a service, but here she was caught, facing some people who needed some answers.

COMMISSIONER SNYDER: I agree with you.

CHAIRMAN CLUFF: And —

COMMISSIONER SNYDER: Some of the answers, I wouldn't have had, you know, with 32 years of training. I would have not had the answers to some of those questions. They were not existent at that particular time.

Also faced with the population in Moscone, you have 1,000 people with 1,000 varieties of questions, problems, needs. I don't know that there is a way to manage a shelter of 1,000 people for that length of time.

CHAIRMAN CLUFF: Well, clearly, there needs to be some information on who's in charge and where they go to to provide the volunteers. And I realize, in an emergency, sometimes that's very difficult.

But it seems to me it boils down to the attitudes of people. I mean, it sounds like you encountered a few, hopefully, of the minority, who weren't very courteous and who were somewhat flippant. Now, maybe that was because they were under a lot of stress, but just dealing with people —

MS. JOHNS: No, they were really quite — quite calm, in fact. Given the magnitude of some of their problems —

CHAIRMAN CLUFF: No, no. I'm talking about the people you tried to get information from.

MS. JOHNS: Oh.

CHAIRMAN CLUFF: "That's not my problem," or "I can't deal with it."

MS. JOHNS: Uh-huh, right. Uh-huh, yes.

CHAIRMAN CLUFF: I mean, our experience of this earthquake is that, by and large, most of the people were extremely helpful and went out of their way to provide useful information. So, you must have come up against a few of those people that are always there, and we just need to — as human beings, need to be just more common-sense- oriented in helping people. It overwhelmed me.

MS. JOHNS: Perhaps one very particular sort of detail, since the post office was closed, and this was a population heavily dependent on government checks, maybe that channel needs to be addressed in some overall disaster preparedness: "If the following post offices are closed and you usually get your checks here, then" — within 24 hours, it seems to me, that sort of thing is the kind of thing that somebody should be able to answer.

COMMISSIONER SNYDER: Are you talking about their assistance checks?

MS. JOHNS: Yes, the SSI checks in particular.

COMMISSIONER SNYDER: And general assistance?

MS. JOHNS: Yes.

COMMISSIONER SNYDER: I was in Watsonville in the following two or three days, and I know the Department of Social Services in that area were making special arrangements to deliver the checks to the recipients.

MS. JOHNS: Oh, great.

COMMISSIONER SNYDER: I can't speak for what happened up here.

CHAIRMAN CLUFF: Let me just say — just a minute, Tom — that the information you've entered into this record, it is being tape-recorded, we will make a transcript of this, this will be made available to a lot of people who will read it. And certainly, as time goes on, we hope someone will listen to your pleas.

MS. JOHNS: I hope so too.

CHAIRMAN CLUFF: We can't give you much better advice right here today, and we're not the group to do that.

MS. JOHNS: Okay.

CHAIRMAN CLUFF: But Tom had some comments.

EXECUTIVE DIRECTOR TOBIN: I guess my observation was that I don't see this as a Red Cross matter. This happened at a Red Cross shelter, but it's like what we've heard from some of the other speakers. It's a matter of communications as to the victims as to what's going on, whether they're at a police barricade in the Marina, or in a shelter, or any other location. It just points to the key problem of giving good information to people who need it.

CHAIRMAN CLUFF: Yeah, right.

EXECUTIVE DIRECTOR TOBIN: And having that be part of emergency response plans — I mean, I would see this as the kind of observation that we should give very strongly to the Office of Emergency Services for their guidance to local governments in structuring for emergencies.

COMMISSIONER SNYDER: There's another social issue, also, Tom, is that some people are more dependent than others. And I think if you were to survey some of the people in Watsonville or some of the other areas, you would not find them quite as dependent on others to provide them with information and to assist them.

EXECUTIVE DIRECTOR TOBIN: But I guess in every situation, the information needed is going to be unique, and how it's given is going to be unique, and the language, and the types of questions that come will all — will vary from point to point. And not only knowing about it, but the ability to communicate it and communicate, you know, real recent information is one that's just come out over and over again, whether it's the police in the Marina, red or green tags, and this sort of situation.

CHAIRMAN CLUFF: Barbara?

VICE-CHAIR RIORDAN: If I could just make a comment, however, I still think that because it's a city-county relationship here in San Francisco, which is a little bit unique, somebody — and hopefully, like yourself — should approach someone. And I don't know whether it would be in what we would call the Department of Public Social Services, because you're dealing with a very special population.

And I think, in the future, they need to realize that there are going to be particular problems if there were to be, you know, continual damage, and we think there probably will be, because of a number of structures in that area, that they be made aware that certain, maybe, key people in those kinds of departments should be there. There should be like an information person.

MS. JOHNS: That would have been ideal.

VICE-CHAIR RIORDAN: Yeah, that would have, you know — we dispatch people all over, but perhaps it's just the simple social needs of this very — it's kind of a fragile population, I guess, is what you'd call it.

MS. JOHNS: Um-hmm.

VICE-CHAIR RIORDAN: And I think your points maybe need to be made to the county and city, because they're a dual role.

MS. JOHNS: I have sent a copy of this to the Mayor's Office. I don't know whether anyone will pay any attention.

CHAIRMAN CLUFF: Well, I'm sure someone will.

MS. JOHNS: Well, let's hope so.

CHAIRMAN CLUFF: And I think the fact that we have this as part of our proceedings, a lot of people will pay attention to the written record of this meeting. And hopefully, we'll get someone to deal with it.

MS. JOHNS: That's why I came. Thank you.

CHAIRMAN CLUFF: Thank you. Thank you very much.

COMMISSIONER PEAK: Just one short —

CHAIRMAN CLUFF: Oh. Bill?

COMMISSIONER PEAK: One short remark. I agree with Barbara. I think you were understaffed there. It seems to me like anyone would have been overwhelmed. You should have had ten other people sitting at the desk with you, and synergistically, you probably would have answered some of those questions, or reduced the stresses.

MS. JOHNS: Well, I actually thought there should have been six tables, clothing, housing, money for lost goods, you know. All of these categories immediately occurred to me, but there it was.

But, again, everybody had a cot, and meals were served, and it was very orderly. People were just sort of sitting around. Nobody was hostile or angry or upset. I just felt hopelessly inadequate.

COMMISSIONER SNYDER: This was on Friday?

MS. JOHNS: Yes.

CHAIRMAN CLUFF: Thank you very much.

MS. JOHNS: Thank you.

COMMISSIONER UMEMOTO: Could I get a copy of your statement?

MS. JOHNS: Yes.

CHAIRMAN CLUFF: Well, just leave it with us on your way out.

EXECUTIVE DIRECTOR TOBIN: We'll get copies, and we'll make them for you.

COMMISSIONER UMEMOTO: Oh, okay.

MS. JOHNS: Thank you.

CHAIRMAN CLUFF: Now, Mr. Browman, we're pleased to have you as our last presenter here today. And — oh, yes — I'm sorry — we do have another one following you.

Mr. Browman, of the Davies Medical Center.

MR. BROWMAN: Well, thank you for giving me this opportunity. I realize it's late, and all the other speakers have already stolen my thunder, so I'll try to keep this brief. In fact, I'll try to shorten what I have to present here.

My perspective is that of one of the smaller private hospitals in the city, and more from an operational perspective the night of the earthquake. As one of the few administrators that lives in the city, it was always my fear that when it happened, I would be in charge. Well, another administrator and I were left holding the bag.

And at 5:04, we were really shaking. Plaster was coming down, files cabinets were opening up, books were toppling out, some of the acoustical tile was coming down, equipment was shifting, and the lights went out. And our first worry was, "Oh, my goodness, it's 5:04, everybody's either left or at the ball game," and "Who's injured?," and "How many patients do we have?," "Should we evacuate the building, or are we going to get 1,000 patients in an hour?," real realities.

Well, the good news is that what worked well is we had no major structural damage. In fact, our hospital came through quite well. We were really quite proud of the way everything happened. We had only one — we had a major fan shift off its mounts on the roof, but we had — all of our fragile diagnostic equipment, none of that broke. All of our laboratory analyzers, our diagnostic X-ray machines all remained in operation. We didn't lose any critical services.

Our emergency power worked flawlessly for the next 42 hours. We were one of the last pockets in the city to get powered up, outside of the Marina District. And that was a surprise to us, because the neighborhoods all around us were getting powered up before we were. And I would recommend that somebody look into PG&E allocation of hospitals, of hospital power.

Our utilities, we didn't lose power, gas, steam heat, or elevators. And in answer to your other question concerning the gas shutoff, we do not have an automatic gas shutoff. We did maintain gas, that presented a dilemma to us. We just — there's big issues on both sides of the coin.

The other good news was personnel. We tried to activate our recall list, and all the phones were jammed. And then the most marvelous thing happened. Our staff just started streaming back in the door. I don't know where they came from, but they just showed up. And the biggest thing I had need for right away were engineers. We had to assess our own damages. And in the door, within the first hour, walked a number of our engineers.

Our staff physicians that we can never get to come to our drills, 25 or 30 of them walked in the door and asked if they could be of assistance. We had volunteers walking in from the neighborhood, doctors and nurses that heard the public service announcements. It was just absolutely marvelous. People really rise to the occasion in a situation like this. We had heard that they do, but it's nice to see it.

Operationally, we — I've been very active with the disaster plan. We ended up not formally activating the disaster plan, because we had no way of knowing how big the disaster was. That was our biggest problem. What we did do is set up what was appropriate.

Our first fears were people coming in and out and security, because it was getting dark, so we locked all the doors of the hospital except that in front of the emergency room, and we dealt through the emergency room, with a command post right next door. We had guerneys lined up in the hallway and disaster carts, and we were ready for all comers. We had 100 beds we could have taken patients into, and perhaps twice that number of ambulatory patients.

We were really up and ready for everything, and it was like giving a party and nobody came — fortunately. We had only 32 casualties over the next three days that were earthquake-related and only admission. That was a cardiac arrest. It surprised us all, the relatively low number of injuries.

One of the biggest problems we had was communications. We are on the Hear Net system that is tied in with CMED. Our radios worked beautifully, although the traffic was extremely heavy. We were constantly giving information out over CMED, but we were getting very little information back. And later, we found out that CMED was having its own problems with the emergency center, and they were not getting the information from the fire battalion chiefs.

What did happen, all of our TV's were not hooked up to emergency power, all the patient TV's. And I found a clandestine TV in one of the departments, and we pulled it and started listening to what was going on in the city. And we heard more of what was really going on from the commercial media. And we were trying to plan how many patients were we going to get. We didn't know if we were going to get two or a thousand. We had no way of assessing how bad things were. All we — and then, on the media, lord knows, the perspective was a little skewed.

So, that was a major problem. And my conclusions from that is I feel the media — I'm usually anti-media, but I feel it has a role in our disaster plans and has to be counted in there. I think hospitals need to have portable commercial radios and portable TV's, because it's another fine source of communication. For all we say about them, they are prepared to handle a disaster. They have the trucks and the vans and all that sort of thing.

So, our biggest problem was just not knowing the extent of casualties. And we actually ended up drawing our conclusions about halfway through the evening, from the commercial networks. We were not getting that information through the official radio channels. I don't believe they had that information.

The other thing was, of course, the lack of PG&E power. We were on emergency power. All our critical services were being covered, but we just did not have — being on emergency power for three days was getting to be a strain. We had no air conditioning in a lot of areas, and some of our computer equipment is very sensitive to air conditioning. And the earthquake took place right in the middle of fairly warm weather.

I just want to re-emphasize the need for ongoing, regular city-state disaster drills. We've fallen down a little in that in the last year or two, but it does keep people trained. It keeps consciousness up, and it tests the communication system. I really would like to advocate that. A few years ago, we were carrying those on with the participation of the City and the Army.

I think many of our disaster plans have too often been focused on the Big One, and lord knows there's a lot in between. I think our disaster plans have to be very flexible to adjust to intermediate type disasters as well as real big disasters. Sometimes, I think you can't even have a real plan; you just have to have a good list of resources, because when you're left in charge of a hospital, you have to know how many beds you have, how much fuel you have, do you have water, and all the basic resources. And I think every hospital needs to have such a basic list of resources.

And it's amazing how little — how few people actually know the fundamental things that they need in a disaster.

I think I'll just end there.

CHAIRMAN CLUFF: Fine. Thank you very much.

Questions from commissioners?

Go ahead, Tom.

EXECUTIVE DIRECTOR TOBIN: Thank you.

The chairman wanted me to ask about gas valves —

MR. BROWMAN: Yes.

EXECUTIVE DIRECTOR TOBIN: — and whether or not you had an automatic gas shutoff valve and if it was triggered.

MR. BROWMAN: I don't believe we did, and our gas did not go off, and we had no gas problems. We've been thinking about that very seriously since, and, of course, the tradeoff is your boilers going down, unless you have an alternate fuel supply. So, it's a very serious question.

CHAIRMAN CLUFF: It's a serious question, and, of course, it's an individual facility decision. As we heard in the testimony earlier, the risk went up because someone had an automatic shutoff valve. And underground facilities, unless they're in areas of faulting or severe ground failure, like gas lines and other underground facilities, the BART system and so forth, always respond very well.

So, the likelihood of damage to pipelines and so forth is pretty small.

And so, it's — unless one has a water heater that's tipped over, or some connection that is difficult, the likelihood of having a gas leak is very small. And therefore, in past testimony, we've heard it stated that the installation of automatic shutoff valves may not be the best way to solve the problem, and, in fact, will contribute to some health problems.

MR. BROWMAN: Right. Well, we too have been going and doing a lot of our own structural bracing and flexible couplings.

And the other area is the whole — all the new hazardous material regulations. I've been very involved in that. And all I can say is that really paid off. We had only very minor spill, which was easily and quickly, safely cleaned up. And I feel if this earthquake had taken place two or three years ago, we would not have been in as good a shape.

CHAIRMAN CLUFF: Well, thank you very much.

The last presenter will be James Russell. He's going to talk to us about concerns of the California Building Officials Board of Directors, it says here.

MR. RUSSELL: I want to thank the chairman and Mr. Tobin for allowing me to speak, since I wasn't on the original agenda here, and I'll be very brief.

Just as a matter of introduction, I'm a civil engineer. I'm a member of the California Building Officials, CALBO. I serve on its Disaster Preparedness Committee. And although I'm a private consultant serving local government building departments, I formerly was a building official in the cities of Walnut Creek and Palo Alto, and served the Commission to produce the first report to the legislature on the URM law last year.

The reason I'm here, Mr. Warren O'Brien, who is the vice president of CALBO, asked me to make these statements based on their executive meetings last week. Their board of directors and officers met to discuss some recommendations for future legislation.

The first item that they are concerned with is that they have a very strong support for a mandatory repair of unreinforced masonry bearing wall buildings. Their concern is based on the absence of clear language in the current law, and they are afraid that some jurisdictions, for political or economic reasons, even in light of this earthquake, may fail to take a mandatory repair approach in formulating their hazard mitigation program.

CALBO, in contrast to its otherwise strong support of local decision-making authority, now feels that this issue needs state direction and authority in terms of making this a mandatory approach everything that it needs, throughout the state.

The board also strongly urges the expansion of incentives and financial assistance to owners of these buildings to promote and expedite the necessary strengthening, particularly where old downtown core areas are involved, and where historic buildings are threatened by the overwhelming cost that must be borne by the private individuals.

The second item involves aid to local building departments, struggling with the burden of extra work and attempting to return to normalcy and conducting non-damage-related permit processing and inspections. The level of permanent staffing in the smaller jurisdictions, particularly in the South Bay, which I'm sure you'll hear about next week at your hearings there, is wholly inadequate to simultaneously deal with the repair inspections and associated record-keeping, and with the normal day-to-day activities.

This is already leading to major delays in processing new construction projects that were in the pipeline, and more importantly, in certain cases, to less than adequate control and inspection of damage repairs, which we fear could ultimately lead to the causes of that damage not being adequately addressed, and subjecting those properties to a repetition of damage in subsequent earthquake.

The average daily pre-inspection demand has been exceeded, and sometimes by a factor of three, in terms of the current workload related to damage repair alone. And the cities I'm speaking of are generally Watsonville, Santa Cruz, Santa Cruz County, and Los Gatos, and Oakland, and, I would imagine, San Francisco, although I cannot speak for that.

Although it may be too late to incorporate the needed assistance in the present state relief plan, the CALBO board believes it is worth considering state legislation to place a surcharge on all building permits, similar to how the Strong Motion Instrumentation program is funded, for a fund or pool of disaster response recovery money to assist local building departments after the next major earthquake.

CALBO, however, would not want to administer such a fund, but would recommend that it be under the control of an existing, appropriate state agency, with a direct relationship with local government building departments, and an understanding of their post-earthquake needs.

A third item that came up, which has not been officially endorsed by the CALBO board but I'd like to briefly mention, is that the Commission has, in the past, rightfully focused on building hazard mitigation policies that are related to life safety. It is now clear that costly non-life-safety problems exist with regard to the loss of use damage to all classes of houses. And if a second level of priority is to be considered, in terms of what types of buildings and what types of repairs retroactively should be applied, the strengthening of existing housing, not only to protect lives, but to assure their continued use where possible, is a very important aspect of this literally irreplaceable resource of housing.

Those are my comments. Thank you.

CHAIRMAN CLUFF: Thank you very much.

Paul?

COMMISSIONER FRATESSA: I hung on one word, or the absence of one word. In your first comment, you urged the mandatory reinforcement of bearing wall buildings. In this earthquake — and I don't have all the data in — but I believe one person was killed because a roof fell on their head, collapsed on top of them, and I think there were seven or eight who were killed by falling bricks of buildings whose roofs or floors did not collapse, which would be an indication they were killed by non-bearing, if I may, brick elements.

Now that I've said that, you know what the question is. Do you also support mandatory retrofitting of non-bearing-wall brick buildings?

MR. RUSSELL: The statement that I made was based on a conversation I had this morning with Warren O'Brien, who is also the Director of Building Safety for the City of Los Angeles, as some of you may know. And he has concerns over the expansion of a program to non-bearing-wall buildings because of the lack of, as he calls it, appropriate technology to decide how to repair these adequately, because the major load-bearing system of these buildings is not the unreinforced masonry, but is a concrete frame or steel frame, generally a concrete frame.

I certainly agree with you that any class of building that has unanchored reinforced masonry, whether it's cladding, whether it's veneer, whether it's infill, or whether it's actually supporting the roofs and floor, is a hazard. That's my personal professional opinion, but that does not reflect what Mr. O'Brien wanted me to emphasize.

COMMISSIONER FRATESSA: I certainly respect his opinion. I wish you would take back to him my comment. And also, SB 547 applies to bearing- and non-bearing-wall unreinforced masonry.

MR. RUSSELL: That's — I understand that, and that's quite clear.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Jim, I just wanted to ask you to verify my impression. Does this represent, this suggestion or support for mandatory repair of URM bearing wall buildings, and the call for state direction, does that represent a significant recent shift on the part of CALBO's position?

MR. RUSSELL: I think — well, some of the members, but certainly not all of them, have a high concern for this. And I think that they have now decided that the time is appropriate to put their opinion officially out to the agencies that need to know, that they are very definitely behind a mandatory repair effort.

CHAIRMAN CLUFF: Thank you. Thank you very much.

That concludes the items on our agenda.

Tom, before we adjourn, I think it was yesterday — my mind's a little fuzzy — but you and I were going over a whole host of issues. While I think we're pretty well worn out today, is it possible that the commissioners could get a draft of some of that, prior to the next hearing?

EXECUTIVE DIRECTOR TOBIN: Yes.

CHAIRMAN CLUFF: And I think it's appropriate that as we approach completing these hearings, that we kind of review where we are in the list of issues that are being identified, and have a very thorough discussion of how we put priorities on them, and how they fit into our initiatives and so forth.

Any further comments or points to bring up before we adjourn?

(No response)

CHAIRMAN CLUFF: So, we will be meeting on November 14th at 9:00 at Watsonville, the City Council Chambers in Watsonville.

Bill?

COMMISSIONER PEAK: I'd like to compliment the chairman on an amazingly smooth two days of hearings.

CHAIRMAN CLUFF: Well, it's only because of the commissioners and of the participants that have all followed the instructions very well. It's been a very orderly process, and I think, again, we have gotten a wealth of information that will be very helpful, to not only us, but a lot of other interested parties, to help us improve seismic safety.

Meeting adjourned.

(Thereupon, at 4:50 p.m., the meeting was adjourned.)

# California Seismic Safety Commission
## Loma Prieta Earthquake Public Hearing

# Watsonville

November 14, 1989
City Council Chambers
250 Main Street
Watsonville, California

**Loma Prieta Earthquake Hearing**
Watsonville
November 14, 1989

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## PROCEEDINGS

CHAIRMAN CLUFF: We'll call the Seismic Safety Commission to order. This is a continuation of our hearing process on the Loma Prieta earthquake.

And while all of the speakers for this morning's hearing are not here yet, we are going to proceed, because we have a full agenda and there are a few items of general business we want to take care of — well, special business we want to take care of this morning.

For the Commission, members interested, if you haven't had a chance to meet the delegation from the Soviet Republic of Georgia, they are five of them, sitting down here in the front: Anzor Chitanava; Joseph Buachidze, Spartak Kereselidze, Thomas Saralidze, and Meherab Aleksidze, all here.

And we welcome you to our Commission hearing.

And these are — this is the group that invited Tom Tobin and I to the Soviet Union in about Christmastime last year to assist them in investigating the effects of the Armenian earthquake. And they have come over here to see what they could learn from this earthquake, and their main interest is hydroelectric projects, dams, tunnels, and power plants and so forth.

They have a serious problem, as we do in California, and that is the poorly designed and constructed buildings, like many of which we see in Watsonville, Santa Cruz, and San Francisco, that have a potential for collapse, given a strong earthquake. They have many of these buildings in their capital city of Tbilisi, and so they're also learning how they can improve the strengthening of those structures to help improve seismic safety in Georgia.

So, welcome, and we're happy to have you here today. Maybe tomorrow, Joseph, you could be prepared to say some remarks, tomorrow, at San Jose, on your observations.

So, we will begin with the first speaker, which is Hal Hyde, of Ford's of California.

And, Hal, if you could come up to the table — ah, he's already there — great.

Let me just say, if you could — if you could briefly tell us, from your experience, during this earthquake, during the earthquake and in the immediate recovery period right after, what worked, what didn't work, what you learned, and how we as a Commission can benefit and increase our awareness and the seismic safety of Watsonville.

MR. HYDE: Thank you, Chairman Cluff and members of the Seismic Safety Commission. My name is Hal Hyde. I am senior vice president of Ford's Department Stores, which is a unique Watsonville institution. On the corner across from our location here, we have operated a store since 1852, until October 17th of this year.

We have 13 Ford's stores and Reilly stores along the coast, from Half Moon Bay down to Arroyo Grande in San Luis Obispo County. This is Ford's third quake. 1868 was the first. And in 1906, I have some pictures of our loss of our store building in Salinas at that time.

We have suffered the heaviest damage of any single firm in the quake, damage in a dollar figure of approximately $13 million in the Watsonville store, about $3 million in the Santa Cruz store, and a lesser amount in a Hollister store.

The physical damage is a 110,000-square-foot store across the street here in Watsonville that has been condemned and is in danger of collapse, a 28,000-square-foot store in Santa Cruz, which is being torn down, and a 15,000-square-foot store in Hollister. We have approximately 140 employees and their families, out of 600 employees, who are furloughed or laid off at the present time.

I was in my office on the second floor of an 1884 building when the quake hit. You could tell immediately that it was heavy. I got under my desk in the China and Glass Department of our store, in this 1884 building. The glass shelves began to break, to fall, to come down. The fluorescent light fixtures started coming down, plaster. With a big crash, a 1,200-pound safe, fireproof safe, came over on its face, and I thought something was really going at that time. It seemed like it would last forever.

It finally stopped, and I crawled out in this maze of plaster and looked around, checked people in the Advertising Department and the other parts of our offices, and moved on up. The amazing thing to me was that the power was still on, and the power stayed on for perhaps ten minutes after the quake. And we emerged, customers and employees alike, dazed, into the back parking lot of our store.

The immediate aftermath, the shocking thing was the amount of fires that were happening in our community. There was smoke going up within two blocks of our store. It was a home that had immediately caught fire. There were other fires around. There were fire engines dashing in different directions. Everyone was in a real state of shock. And the sun sank in the west, in a beautiful, never-to-be-forgotten sunset — never-to-be-forgotten sunset.

It was immediately —

(Interference from public address system)

MR. HYDE: I think it was made on this one over here.

We had splendid cooperation from our Watsonville Police Department, the Watsonville Fire Department, and within hours there were fire trucks in our community from Pacific Grove and Monterey and Carmel. The police presence was on the street, in spite of the fact of our —

(Interference from public address system)

EXECUTIVE DIRECTOR TOBIN: Teri, why don't you ask somebody from the City if there's something that we don't know about.

MS. DE VRIEND: They don't — they don't — I just went over there, and they said they didn't know. The person that usually takes care of that isn't here today.

EXECUTIVE DIRECTOR TOBIN: Okay.

Mr. Hyde, we have three systems recording you, none of which have to go off of this system, so, maybe, if it's —

MR. HYDE: All right. Well, I'm comfortable. I'll do whatever you'd like me to do.

EXECUTIVE DIRECTOR TOBIN: Yeah, if you're comfortable, we can hear you.

MR. HYDE: Can you hear me all right?

CHAIRMAN CLUFF: Hal, don't worry about it.

EXECUTIVE DIRECTOR TOBIN: The house mike isn't a problem for us.

MR. HYDE: All right.

EXECUTIVE DIRECTOR TOBIN: Thank you.

MR. HYDE: The other agency, particularly in the rural parts of our valley, was CDF, the California Division of Forestry, was magnificent. I don't know where so many agencies came from, and particularly because there were bridges out in the — particularly in the Corralitos area. They spotted fire trucks in different areas in different parts of the area there.

And anyway, the presence of the police and the presence of the fire departments was significant, in a long night. Immediately opposite our store, in the Oddfellows Building, there was a brick wall of brick into the street. There was a woman killed in that particular area.

It was eerie, the amount of lights in the plaza, and the plasma being given to patients there in an immediate Red Cross first aid situation. My feeling is this was a magnificent response to a very trying and very troubled situation.

I was fortunate to be able to find a civil engineer at 9:30 at night in Aptos, and went over and — our phones were not working in this area, but I got into the Aptos area and called him, and he has — his name is Richard Huyck, and he's been at our side ever since, in some very trying kinds of situations, as far as the condemnations of our buildings. And that has been a big help.

I guess, as I look back on it, those of us that have had older buildings, the ability to have someone who really knows what they're talking about in these things, how buildings are hooked together, the strengths, and the problems that are involved.

Our corporation is now faced with a need for some $15 million to $20 million in funds on rebuilding and on replacing our merchandise.

And from a public point of view, the $500,000 cap on SBA loans does not really speak to our conditions. I realize this is not your particular interest, but those of us that are in this mid-sized companies, I'm hopeful that there are ways of trying to make us and our firm and our employees whole in some way that we can move into the future.

As I say, we have about 600 employees and their families that are dependent upon us, and our company has been involved for over — our families have been involved for a hundred years, over a hundred years, in this, in this enterprise, and are now down into the fifth generation of family members that are part of our corporation.

We have a broader community problem. Part of this is — the funding for our store and its enterprise is just one of these, but the question of funding of our community and developing the plans and the course of action as to how this community of Watsonville, which has been so badly hit, is going to proceed into the future.

And it's a great challenge and a great opportunity. We need to work together for this.

This is terribly complicated by the fact that in the City of Watsonville, there's 8 percent of the family housing has been destroyed or in serious condition. In the unincorporated parts of the county surrounding us, we have a 4 percent loss of housing. And in the City of Santa Cruz, there's a one percent loss of housing. And this is at a time when there was a one percent vacancy factor in the county as a whole.

I guess what I've learned, on old buildings, we need to find out where the — where the problems are. We had some ideas of our problems, but never realized the seriousness of them. We thought perhaps we might lose a store from the earthquake over the years, but the fact that we lost three in fifteen seconds was something we never believed might be — might happen to us.

And as old buildings are fixed up, I would hope that the public interest could find that there are financial incentives and mechanisms that could be put in place to help make that possible for the private enterprise to do the necessary things, from a safety point of view. And such things as depreciation, such things as low-interest subsidies, other mechanisms of a financial nature might — are something that should obviously be considered.

I'd be pleased to answer any questions.

CHAIRMAN CLUFF: Thank you, Mr. Hyde. We want to extend our sympathies and understand to the difficulties that you personally, with your company and the City of Watsonville, have experienced. And whatever means that our Commission can bring together to assist you in the recovery, we're certainly here to help.

Let me just quickly go through what our Commission activities are. We have 72 or 73 initiatives that deal with earthquake preparedness, earthquake mitigations, looking at facilities that may not be as seismically safe as we would like, and we need improvement of those, and then we have the response during the earthquake, and then the recovery, both short- and long-term. Of course, you are in the recovery period now, and we clearly appreciate that's where most of our efforts need to be concentrated.

But for us to learn, both the City of Watsonville and Santa Cruz and others, and the whole state of California, it's of a great deal of interest to us as a Commission for the long-term outlook on seismic safety, to learn what we can learn from what work during preparedness, and what we could improve in terms of the mitigation. And we might ask a few questions that kind of focus back on those areas.

I would start off by asking, how did the old buildings that maybe had been strengthened to resist earthquakes compare to some of the older ones that did not? Have you — can you give some experience there?

MR. HYDE: Our buildings were in four parts, the oldest being in 1884, and the last one about fifteen years ago. The 1884 building has serious damage. It had been strengthened. And on the other end of the spectrum, the one that was done fifteen years ago, has two large concrete pillars in the front on Main Street — they're about 5 feet wide by about 3-1/2 feet deep, good quality concrete, with heavy rebar in them. And in the quake, those particular pillars are — have failed, and there are large cracks in the concrete there. And it was just amazing to me, as pointed out by the engineers, that in a modern building, on one end, that this had failed so badly.

A building built in 1928 with a concrete — as I say, this is a 110,000-square-foot complex — the building of concrete beams and so on, in the center, has generally been okay. The ties to this failed, the newer building, and the failed 1884 building — again, the total complex, there were no problems.

CHAIRMAN CLUFF: Well, that's the kind of thing we need to look at to see what we can learn.

Are there other questions?

Hal?

COMMISSIONER BERNSON: Did you say one of the buildings had been strengthened? What type of strengthening was done to that building?

MR. HYDE: Sometime in the 1920's, there had been different steel added. I'm not an engineer. I don't know specifically what happened to that, no.

COMMISSIONER BERNSON: I see. What about the recovery period? Are you planning on rebuilding in the same locations?

MR. HYDE: Well, we're an integral part of the business and community fabric of this community, as we also are in Santa Cruz and some of the other 13 communities we're a part of. And right now we're looking at our options. From the heart, we want to do this. From the fiscal side and how we're going to pay for it and so on, we haven't got our courses of action.

We do not have earthquake insurance. There are some other aspects of it. There are some interesting Department of Commerce guaranteed loans that we might investigate, the block grant aspects, or other ways of perhaps doing it. We don't have a clear direction at this particular time.

CHAIRMAN CLUFF: Other questions? Pat.

COMMISSIONER SNYDER: Yes. Were there customers in your store at the time? Were you still open?

MR. HYDE: Yes, there were. And no injuries in Watsonville. In Santa Cruz, I might briefly — I will not be at your hearing in Santa Cruz, at the hearing there this afternoon — we had a store there, and our store there was structurally okay, but the building next to us, a bookstore, with four floors of brick walls next to us, collapsed, falling down onto our roof and taking out our roof and killing a long-time customer and friend of ours in the fitting room there, and seriously injuring one of our employees who was at the checkstand there, helping her.

COMMISSIONER SNYDER: Had your employees had any instructions as to what to do in an earthquake, for their own protection, for their personal protection as well as their customers? This is not critical — I'm just asking.

MR. HYDE: No, we — yeah, we've had — we've had some — I don't think — it was just general emergency procedures, that one will not use the — that one will take cover as they can, will not use elevators, and will proceed in an orderly manner to evacuate.

CHAIRMAN CLUFF: Other questions? Bill?

COMMISSIONER WASTE: This may not be a fair question, but I'm going to ask it anyhow, just for the record. Are you familiar with the building codes in these cities and this county as to what is and what isn't required from an earthquake protection standpoint, today?

MR. HYDE: I'm not technically qualified on that. I know there's been a lot of discussion on the question of unreinforced masonry buildings. To my knowledge, Watsonville has not taken a stand on this. Some of the other communities where we operate, particularly Gilroy, has recently come up with an inventory of the things, where we're pleased that we do not have an unreinforced building in that — in that.

But I think my feeling after this experience is that this inventory needs to be taken. And as I suggested, there should be mitigation happening, from the safety of the populace in California, but there should also be some way of making it possible for the individual building owners to pay for it in a reasonable manner.

COMMISSIONER WASTE: One more question?

CHAIRMAN CLUFF: Yes, Bill.

COMMISSIONER WASTE: Just for the record, Hal is a friend of mine, and I've known him for some time, and I know some of the other hats he wears.

Hal, at one time, you were associated with the University of California at Santa Cruz, and I wondered if you have any input on what happened there or what their situation is.

MR. HYDE: Well, for the record, I was vice chancellor for business administration — or for business and finance for eleven years at the University of California at Santa Cruz. I do not have direct knowledge. I understand that the Natural Sciences Building 2, which housed physics and the Lick Observatory, suffered damage, but I do not know specifically.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: We're concerned about the effects of earthquakes on the economy of regions, and I know that this is — it's obvious, driving down the street, that the effects will be long-lasting in Watsonville. The studies that have been done in the past have always been rather vague in terms of how to anticipate these effects.

Do you or the people in Watsonville yet have any estimates in terms of the economic losses, on top of the physical losses, how extensive that might be?

MR. HYDE: I would hope that the people from the Chamber of Commerce, Charlene Shaffer, in the blue dress, coming in, could perhaps speak to that, that question, better than I. I've been so busy with my own firm's problem that I have not really had a chance — that's a question that you should ask Mrs. Schaffer when she testifies.

CHAIRMAN CLUFF: Any further questions?

(No response)

CHAIRMAN CLUFF: Well, Mr. Hyde —

MR. HYDE: May I leave with my list of interesting questions asked of me. It reminds me of the transcript of a hearing that was — where one of your predecessors, Andy Lawson, was testifying on the Golden Gate Bridge and that — after a long testimony by Professor Lawson on the — on what was happening on the bridge, he was cross-examined, and the question was: "Now, Professor Lawson, you mean to tell me that you can tell exactly what's going on down in the bowels of the earth?" And Andy Lawson, Professor Lawson, piped up — and he directed it to the chairman, and he said, "Your Honor," he said, "the question's absurd; the earth has no bowels."

(Laughter)

CHAIRMAN CLUFF: Thank you very much, Mr. Hyde.

The next speaker is Luis De La Cruz, Hispanic Affairs. Is Mr. De La Cruz here?

(No response)

CHAIRMAN CLUFF: Okay. Then we'll move on to the Chamber of Commerce of Watsonville. Charlene Shaffer is here, and sitting at the table.

Welcome. Let me — maybe the other microphone is —

MS. SHAFFER: This is working.

CHAIRMAN CLUFF: Ah, it's working. Okay.

Let me tell you what our objectives are for this hearing, since you just came in and didn't have a chance to participate in the beginning.

Our Commission is involved in a number of initiatives for the whole State of California, on earthquake preparedness, mitigation of earthquake hazards, which would improve our earthquake safety, the response during the earthquake, and then the recovery, both short- and long-term.

Of course, your city is deeply into the short- and long-term recovery aspects. And what we'd like to hear from you is your experience, from the standpoint of what worked, what didn't work, what you learned, in all of these areas, and how we as a Commission can help you in the long-term recovery aspects, and then what can we learn from being better prepared.

MS. SHAFFER: Chairman Cluff, I also — and commissioners, I invited a number of people from the business community to speak, so I would like to ask one of them to come up now, Mr. Miller.

Ken Miller is the owner, with his wife, of Johnson Drugs, and they also are property owners. They own and operate the drugstore as well as own three buildings on Main Street. So, Ken will be speaking both as a property owner and as a merchant in downtown. And I think you'll be interested to hear what he has to say.

CHAIRMAN CLUFF: Thank you.

Welcome, Mr. Miller. And we're here to try to understand and help as much as we can.

MR. MILLER: Well, I always feel a little bit uncomfortable here, because usually I'm under fire.

(Laughter)

CHAIRMAN CLUFF: We're not here to point any fingers or to get anybody in trouble; we're here to help.

MR. MILLER: It seems like we're always on the other side, so I'm not sure.

EXECUTIVE DIRECTOR TOBIN: Well, we're not the city council, so —

MR. MILLER: Right. Well, things are looking up, then.

CHAIRMAN CLUFF: Yes. Fine.

MR. MILLER: I don't really have a statement. It has been a very sobering experience, as far as the earthquake.

We have lived in Watsonville 27 years, which I've owned the local corner drugstore, and we have survived some terrible things, like the chains coming into town, Longs and so forth, and seem to have — and finally seemed to be kind of coming back. And it — it's been a very interesting and a very fine town.

Of course, we've known that we've always lived in earthquake country, and I think it was probably on the back of our mind, but we always thought it was going to be in Coalinga or Hollister or San Francisco or someplace else, but not Watsonville.

As I say, we've lived here — or, see, moved in 27 years, and two years later we did buy the Jefsen Building. It's a piece of property, 201 by 188 feet, 180 feet — 188 feet, that fronts Main Street. And there are basically two major buildings, and there's a smaller third building, on the East Lake side.

Our store, I thought, came through the earthquake fairly well. In fact, we had it picked up pretty well, and even were open for business out the side door until the City rudely walked in about 1:30 Friday afternoon and told us to get the hell out. And they weren't very nice, either, so — and it would have been a lot nicer and little bit better, for customers, friends, if maybe we could have had time to finish up those few things, for the deliveries and like that, without having anybody come in.

But it's quite a traumatic thing, particularly when you have your buildings severely damaged, your drugstore, kind of wondering where you're going to locate, your home is damaged. Any of three things is probably enough to do without worrying about one of the other.

I think that the local officials, as far as the immediate emergency, seemed to do a very laudable, very credible job. I know there were six of us that stayed overnight down at the J.C. Penney building, and kind of watched over things — not that we didn't trust the police or anybody, but they did do a great job, as I say. They were around. In fact, even some were driving their own cars and like that, and it was very well patrolled and did a very fine job.

I do have some questions, of course, after the earthquake and how rebuilding is going to come. I know what a time we had with revitalization and redevelopment before. We didn't get — I don't think — we didn't ever get to first base, let alone to second or third base. We were making a little headway, maybe in the late '70's, the first part of the '80's, and then the in-fighting between the county and the city, and the other things which torpedoed it, so it's just been a losing job. And I don't think, really, anybody wanted to see downtown go.

I did hear on the radio that they're expecting a
— what? — a $3 million loss of taxes. Well, maybe they do now realize the importance of downtown. But I'm afraid the long-range plans of the city have not been towards the Main Street. I hope that they are now.

Maybe I'm — but let's hope that the history is buried and that we do start on a new plane and get going, and we'll come ahead with our downtown.

It does kind of bother me, on these — the emergency period, which I guess is due to end at the end of 30 days — because, still, a lot of us are kind of wanting to possibly save some of those old buildings. But really, if they're going to have to come down, you can't really afford to lose the money from FEMA that will pay for bringing those down, because it now costs more to destroy them and to demolish them than it does to build them. And, of course, it's a sign of the times and the inflation.

And it is truly an expensive thing to replace that which you have lost. And I hate to admit I never really considered it being like that. But we had somebody, of course, got their computer up, an architect, and then they kind of cranked it up, and they said, well, basically to replace the same buildings we had there was something like — oh, $3.75 million, give or take a quarter-million — which is usually a "give" — and so, it does kind of make you wonder.

And where does it come from? Really, it should not be considered a disaster. It probably is an opportunity for the downtown to come back. And of course, I remember we used to kind of laugh at these redevelopment — how we weren't getting very far, and we used to say, "Well, all this redevelopment needed was a good earthquake." Well, we really didn't mean that. I'm sorry if I ever caused it that way.

But it has — what kind of does bother us is that we don't really know — seem to know where we are or where we're going. The information doesn't seem to be coming out. We've had basically — well, two structural engineers — another one is coming in the field to see this, and we don't seem to know, dollars and cents, where we are, whether we can rebuild, or whether we can repair, or what we can do.

It is very frustrating, and it would help, I think, very greatly, if the emergency period could be increased, say, by another 15 or 30 days, where you actually are not under the pressure of the gun, of the economic ball', I guess I would say, to knock your investment down, because once those buildings are gone, it's going to be a long, slow period before they're built back, because I'm afraid there are no bottomless pockets here to finance it all.

I understand, in the Sunday Sentinel Sunday that — was it — it's been five years or — I forget when the last — when the earthquake was down there, but, I mean, I followed it very closely at the time — but anyway, on the two main corners, the buildings are still not built. I consider our corner a main corner. It is the main intersection of the town. Main and East Lake are really about the only two streets that go through, that go anyplace.

So, it does have me wondering. I'm not worried. It is a good piece of property, our business. We did have some problems. We located to about a 750-square-foot office building, and we're filling prescriptions only from the corner drugstore, which is about three times as big.

And I am very grateful to my friends and customers and the people that have helped us and shown the way. But it — I guess I really have nothing further, other than just —

CHAIRMAN CLUFF: Fine. Thank you, Mr. Miller.

Charlene, do you have others you'd like to speak, or did you want to say something?

MS. SHAFFER: I have — no. What I really wanted to say at the beginning, Commissioner — I need my glasses — it is Cluff, is it not?

CHAIRMAN CLUFF: Yes, it's Cluff.

MS. SHAFFER: — is that I want to commend all of the commissioners for coming to Watsonville and giving us the opportunity to really air our concerns before a body. We have, for whatever reasons, not been really invited to participate in other — with other — with some of the other bodies, and not always knowing the protocol of when it's appropriate to go to Sacramento and when it isn't, we — our business community has been, I think, woefully neglected. And I just want to commend you and the staff and the commissioners for caring enough to come to Watsonville. We really appreciate it.

At this point, I notice that Luis De La Cruz has come in. And I think Luis could speak to the needs of the Hispanic businesses.

CHAIRMAN CLUFF: Ken, could you stay for just a second? There may be a couple of questions.

MR. MILLER: Oh, yes.

CHAIRMAN CLUFF: Let me —

MS. SHAFFER: Go ahead. Sorry.

CHAIRMAN CLUFF: Charlene, let me just respond to your frustrations that we are clearly seeing. While we as a Commission can't take immediate action on any requests like this, entering this information in evidence into our public record is a legal document.

And so, if you have information that you want to leave with us today, either spoken or in writing, or, in addition, send us, to our Commission office in Sacramento, maybe a further information that you'd like to have entered into this, our compilation of all of these hearings, we'll be glad to consider and have a part of our record.

So, at least others will have a chance to read it.

MS. SHAFFER: Thank you.

I wanted to comment on one thing that Mr. Miller said, and that is that Mr. Miller operates a business that is of key importance during a disaster. It's extremely, as you know, that people are dislocated during floods, tornadoes, whatever, an earthquake, and sometimes are separated, or their prescriptions are destroyed.

So, something in your policy-making that you may think of in the long term — and I'll speak a little bit more about that after — is what kind of support a business such as a small clinic or a pharmacy, prescription eyeglasses, all of that, the dental products, to consider how we deal with those in a crisis is extremely important.

CHAIRMAN CLUFF: Thank you very much. And we heard testimony in San Francisco in the Marina District on exactly those things. But we're glad to have additional data, and we're happy to have you tell us about that.

Maybe there are some questions from the commissioners of Ken Miller.

Pat?

COMMISSIONER SNYDER: Yes. Mr. Miller, I'm a registered nurse, and I was in the Coalinga earthquake as well, and heard similar stories from the pharmacists.

MR. MILLER: I have followed very closely the rebuilding of the two stores.

COMMISSIONER SNYDER: Yes.

MR. MILLER: A friend of mine that lives in town owns the one store that —

COMMISSIONER SNYDER: One of the problems they had was that since they moved their business, even just a few doors away, they were not able to accept MediCal and Medicare clients, because they changed their address. Did you have any problems with that with the state?

So far, I haven't had any problem, but I really haven't totally —

COMMISSIONER SNYDER: You don't know yet what you have to do with that question?

MR. MILLER: I had some of my billings in. Unluckily, our computer did stay down. We had problems — one of the glasses in the pharmacy broke and fell down and broke my printer, which is probably the most prime thing in the whole earthquake. The Board of Pharmacy was very cooperative, and they said, "Go to it," and they just encouraged us very much.

In fact, my friend that had sold his store in Coalinga before the earthquake told me that the state board and the wholesalers were your best friends, as far as the earthquake.

COMMISSIONER SNYDER: Right.

MR. MILLER: And I can really believe him. They have been very supportive and very helpful.

COMMISSIONER SNYDER: Were you able to retrieve your patient records or your prescription records?

MR. MILLER: Most of our prescription records are retrieved. There was no problem. We did have our computer, which, basically, all of the current things are in there, and then we did save all of our other records.

The problem was that when we moved, we moved very fast. At first I was wanting to move the pharmacy, but, anyway, I had a bunch of pharmacists that were helping, and their enthusiasm kind of got away, so we ended up moving the whole store.

And, of course, it's — the problem is finding things afterwards, what you need, particularly the common things, and my pharmacist is very thorough, very efficient, and these things bother him, as far as — but it has — considering all the problems, I think it has gone fairly good, because we really moved in about four hours, from, oh, about 8:30 in the morning Monday, and it was about, I think, a quarter to one before we were all out. And we even filled a few prescriptions that next day. We moved about a block away, to a business office.

So, we were not operating very efficiently, mostly out of boxes and plastic bags and so forth. But we were — we were getting by. And hopefully, there's not going to be any problem as far as the buildings.

By the way, I did get some MediCal checks yesterday, which I appreciated.

COMMISSIONER BERNSON: Before Hal leaves —

CHAIRMAN CLUFF: Go ahead.

COMMISSIONER BERNSON: Jim — Jim, would you ask Hal to hold on for just one second, before he leaves?

CHAIRMAN CLUFF: Mr. Miller, could you describe to us a little bit more? You seem to be frustrated about the City condemning your building and kicking you out. I'm sure you understand the responsibility they have sort, but could you describe to us how you and the City might work together to improve that, in an advisory capacity, to others who might experience it?

MR. MILLER: They've always been good friends, but we have had disagreements, as far as that goes. And what particularly bothered me was that a young man said, "There are other drug stores." And, true, there are other drug stores. And, you know, it — I think, as long as we signed a paper and said that we were responsible for our own actions, there would be no problem for us staying. If we want to get killed, it's our own lives, as far — if we had things that we felt were important to our patients or our customers.

And I think we should have been able to at least stayed there to finish our deliveries, and, you know, go out in somewhat of an orderly manner.

I will have to compliment the City for giving us much time in getting our things out, and probably more so than they should have. And it started raining, which kind of complicated things, when we were moving, and so, between the things, it was quite — it was quite an operation.

CHAIRMAN CLUFF: Thank you.

Other questions from commissioners? Tom?

EXECUTIVE DIRECTOR TOBIN: You mentioned that there's a 30-day deadline that you're facing. Did that begin 30 days after the earthquake occurred, or is that another date?

MR. MILLER: Well, the pressure is on to have it in by tomorrow at five o'clock, so that doesn't give us really, you know, much time.

EXECUTIVE DIRECTOR TOBIN: That's a FEMA rule, in terms of what they would cover?

MR. MILLER: Well, I think FEMA really goes — they want to get the ball swinging by Friday, I understand, so that they do not lose their FEMA funds. And, of course, those are big bucks; there's no getting around it. And I can understand that. But there's some — should be some reason that could be extended so that you could, you know, look at it really in depth, people are qualified, to come up — and we did have the gentleman from Pasadena that came and spoke to the council meeting, the — what's the Greek name, the specialist on —

MS. SHAFFER: Kariotis.

MR. MILLER: — Kariotis, that spoke on the brick buildings.

And we do need some people like that that do have some information. Most engineers, of course, are of the new school, and they don't really have any — well, they don't feel comfortable with the other standards. So, I don't know. It —

EXECUTIVE DIRECTOR TOBIN: Well, again, on the 30 days, if I understand this correctly, the city can receive funds from FEMA for demolition work, if the demolition work is commenced within a period of time after the disaster is declared.

MR. MILLER: I think — it has to be commenced, I think, or arranged for, before the end of the 30-day emergency period. I think they are striving to be started by this Friday.

MS. SHAFFER: Determined by the governor and by the president of the United States as to when they declare this a disaster area. And the meter starts running at that point.

A little follow-up to Ken's comment — one of our recommendations, and where you all might be real helpful, is you have a cohesive policy manual with a list of resources, one being structural engineers. They were — because of the breadth of the disaster, they were extremely difficult to find, and then, even after you may have located one, it may not have been the appropriate person due to the nature of our buildings.

CHAIRMAN CLUFF: That's very helpful information, and we'll do all we can to improve the state's policies for future events, and whatever we can do to help you in your recovery period now. We certainly are —

MR. MILLER: It's my understanding that the other earthquake disasters, at Coalinga and Whittier, that they did have more time as far as the emergency period. Let's see. 90 days, I believe, was Whittier. And I'm not sure on Coalinga. Do you remember?

COMMISSIONER SNYDER: Well, the downtown area was being demolished very quickly. There was discussion about that, that they got into it too quickly.

MR. MILLER: And I think they're sorry that they acted so quickly. And, I mean, that's the problem. I think you do have to have time to collect your wits.

In fact, in this article in the Sentinel last week, it said that you were really — a year before you really could get back to some semblance of normal.

CHAIRMAN CLUFF: Well, it's — my own experience is the — acting in haste, if one has a lot of things well thought out, you're probably right most of the time. But if you don't have a plan, or you haven't thought it out, acting in haste you usually make the wrong decision. So, this is why we want to gather information for future events, so we can be better prepared.

MR. MILLER: The City has been unable to adopt plans, as far as downtown, for a number of years. So, I am not — I hope that we can change that around to that we can. I mean, it seems like the plans that we do adopt, we change them through our own interests, which is not necessary. Downtown I don't see anything wrong with shopping centers, but I think there should have been a priority in getting something down here, as far as —

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. Just to clarify one thing, that's FEMA requirements, though, on the 30 days, not the state. Is that right? Or is he saying that the state's doing this?

EXECUTIVE DIRECTOR TOBIN: Well, I'm not sure, but I think it's a FEMA requirement.

MR. MILLER: I think it's FEMA requirement, I believe.

EXECUTIVE DIRECTOR TOBIN: But I don't know of that being a FEMA requirement set in law. I've -- you know, I've wondered what --

COMMISSIONER BERNSON: It should be flexible, I would think.

COMMISSIONER PESTOR: Right.

EXECUTIVE DIRECTOR TOBIN: Yeah, So, that's why I was questioning that.

COMMISSIONER PESTOR: Because I think there's a similar problem with the federal highway funding too, that in order for them to pick up 100 percent of the tab, it has to be expended within 180 days.

EXECUTIVE DIRECTOR TOBIN: Right.

COMMISSIONER PESTOR: And so, there's this big rish to rebuild in 180 days, and they may not -- they may be building on poor soil conditions, there may not be enough time to evaluate it, and all of that. So, I think those timelines are something we ought to look into.

CHAIRMAN CLUFF: Any further questions?

(No response)

CHAIRMAN CLUFF: Well, thank you, Mr. Miller.

MR. MILLER: You're welcome.

CHAIRMAN CLUFF: And, Charlene, did you have others from the Commerce that you'd like to have? Fine. We'll just let you —

MS. SHAFFER: And I would like to do the wrap-up.

CHAIRMAN CLUFF: Okay, fine.

MS. SHAFFER: If that's all right, that's your policy and procedures?

CHAIRMAN CLUFF: There's no — whatever you would like to do, as long as we keep things moving.

MS. SHAFFER: Thank you.

I'd like to ask Luis De La Cruz to come up. Luis is a director and an incoming vice president of the Chamber of Commerce. He is the owner of Ken's Trophy and a former school principal, and the chair of our Hispanic Affairs Committee.

CHAIRMAN CLUFF: Welcome to our Commission meeting, and I presume you've been here to hear our proceeding. We need to keep things short —

MR. DE LA CRUZ: Sure.

CHAIRMAN CLUFF: — and give us your experience on what you learned, what worked, what didn't work, and how we can be of assistance.

MR. DE LA CRUZ: Good morning, and thank you for the opportunity.

One of the things that — you know, I've been watching a lot of TV lately, in terms of how to prepare for an earthquake, after the earthquake, of course.

(Laughter)

MR. DE LA CRUZ: And one of the things it says — you know, you should buy this, you should have this, and I started calculating how much it would cost, as a small business owner, to keep all that, and everything on reserve. Anybody who's started off a small business, if you can have that much reserve, you might not need to be in a small business.

I think that kind of says a little bit about small businesses.

Since the earthquake, I've come to learn a lot more about businesses, mainly because a lot of people have looked toward the Chamber for leadership, in terms of, "How do I do to survive in my business?" After much thought and everything, it seemed like, gee, there should be a how-to book right after the earthquake. As soon as the earthquake happens, hand out the how-to book, as to how do you — how do you deal with it.

I know that sounds real simple, but maybe that's one thing — I know I haven't found that how-to book, myself — but that might be an idea, whether it be in a pamphlet form, or whether it be the Sacramento or our state office, immediately after a disaster, sends out a how-to book. That's a suggestion.

And the other one is I do notice that emotions — and I don't know how you can help with emotions — but yesterday, in one of our meetings, Chamber meetings, business meetings where we had some people from the State Department of Commerce, a young lady just started a business a few months before the earthquake, and just bought a house and everything, and when they were asking her for her questions, the first thing she started doing, she started crying.

And it's very emotional, and that's something that's very hard for individuals. And you get officials coming in from the outside — we've got a lot of people coming in from the outside, especially officials, and I know they want to get their job done, and they forget the human part — at least I feel they do. And I know they don't want to get emotional, because that means that you create a tie. But I'm hoping that, as you fill out those FEMA forms, especially people who do not want any — they don't want a handout, but yet, they're in trouble. I'm one of those. You know, you don't want a handout, but you're in trouble.

And it sure helps — and I know they go through hundreds of people — that either you — that FEMA or the state officials and so forth, don't forget that human part. I'm sure there are some people trying to cheat the system, or whatever, but there are some really dire needs. And that human aspect needs to stay there, because it really helps when somebody just grabs you on the shoulder and says, "Hey, that's all right, you'll live through it," believe me. But when you constantly just have, "Well, you have to fill out the Number 3000 form here, fill it out completely," with a straight face and no feelings, sometimes we feel like throwing it back at them.

That part — and I don't know how you can accomplish that, because I know, if you work 18 hours a day and you're putting in your time, sometimes you get a little frustrated. But the same thing, there's a lot of emotions.

The number in the downtown area -- I don't know your dealings with the state departments or how you function, but sometimes we deal with teh bureaucracy -- we have the county, and then we have the cities. When funding comes down, sometimes instead of giving it directly toward where it's needed, I noticed yesterday, the Department of Commerce channels it through the county, especially the county office, which has very little to do with the daily operations of businesses.

And it seems like -- I don't know how that was done or how that was accomplished — if that could be looked at in terms of, hey, if you're going to have to take a chunk here and a chunk there, by the time it comes to the city, you've already taken two chunks.

Please, I think that businesses do need help. People need to get back to work. There is a tremendous number of people out there right now that are now looking for work, or out. And there's a lot of them that just don't want a handout; they just want to get back to work.

And it's kind of scary, because when you constantly hear on the news, "Free this, free that," it kind of makes you jitter that everything is free in this world, and it's not.

I'm concerned about businesses, and I'm concerned about Watsonville and its small businesses, mainly because there's quite a significant number in downtown. And I'm sure you've already walked through there. If there's anything that can be done for that, that's why I'm here.

And I guess the two points is: one, the emotional part of it, and, two, maybe a how-to book for businesses or for the generalities. And I could speak on some other things, but business is what I'm here for. And if I can answer any questions, I'll be more than glad to.

CHAIRMAN CLUFF: Thank you very much.

Let me ask you a first question. As you were introduced as a former principal of a school, how did the schools fare, and some lessons to be learned there?

MR. DE LA CRUZ: Gee! As I know protocol, it would be very inappropriate for me to speak on behalf of the schools.

CHAIRMAN CLUFF: Well, no, but did the schools survive, or did they collapse? What happened to them?

MR. DE LA CRUZ: Well, I think there was a conflict there. There's a huge amount of money they're going to spend to get them back to opening day. They didn't open, I think, until the following Tuesday, which was a week from the time of the earthquake.

And, gee, the expenditure, what I heard last time, it was almost like $70,000, $75,000 a day to try and get them just to where — to open up.

Again, you know, to talk of some tragedies before in the school, like a flood and so forth, you're speaking about emotions, you're speaking about psychological effects on kids, you're speaking about quite a bit. I guess you can say, "Thank God not that many people were physically injured or died." But the emotional part, I think, is the schools have done a tremendous job for getting that.

But I — they fared pretty well in terms of they're still there. But emotionally, they're —

CHAIRMAN CLUFF: Thank you.

Further questions from the Commission? Dan?

COMMISSIONER EBERLE: Mr. De La Cruz, we noted in Whittier that there was a considerable amount of a problem with the Hispanic community and the matter of trust, the government officials, and also some migrating problems. Were there any of those types of problems in Watsonville?

MR. DE LA CRUZ: Well, you know, you're going to

— you're going to hear all kinds of differences of opinion on that one. Sometimes fear is put on people by other people, for what reason, I'm sure there's some reason for doing that, but people are always when you go ask for a handout. I know I am, when I go ask to borrow $20 from you; you're a little nervous.

I think people, the officials and so forth — that part will always be there. There's all kinds of rumors that went around, there's all kinds of accusations that have gone on regarding governmental — one of them, obviously, there was a lack of forms, and they ran out of forms, for whatever reason. I know I've run out of forms before, for whatever reasons. Maybe there could have been — as they brought them in — I don't know — but those forms, you could say, it shouldn't have been run out of things.

We've got a few bad situations in the town. Obviously, the low — there will always be an increase — I had a little spill — there will always be an increase, because of population, there will be an increase. You've got an increase in the upper class, increase in middle class, and you've got an increase in your low-income families. And as the population continues to increase, you're going to have a larger one.

It's traditionally said that the low-income families happen to be not educated, not known, so there will always be fear. I don't care who it is, if there's somebody wearing a tie, someone in uniform.

How to deal with that — God, there's all kinds of ways. You know, to say that you have to be their kind of people in order to help them, I don't believe that.

Again, my background has been — I was poor as poor can be, and a migrant family, raised in a migrant family situation. We traveled across from Florida to California, and proud of it, because I learned a heck of a lot in terms of people, from one state to the next. I happen to be lucky enough on it.

But I'm not one to say that there was wrongdoing or anything. Obviously, after the fact, we can always we could have done a lot better. That's true. But you work with what you have, and you move right along, and you try and get everybody. I think that when I saw people out here helping each other, I think one thing that can be said — can be said is that there were a lot of neighbors that got to know their neighbors. They might have been living there for ten years and did not know who lived next to them, or across the street from them. But, by golly, they know now, and they know what their names are, and they know what happened.

There are some sad stories out there. If you look hard enough for them, you'll find them. And there are some accusations of discriminatory — that the Hispanic didn't get a say. I don't know how true that is. I mean, I think you can walk into this building here and walk into any office, and it doesn't matter who you are, and get an answer. You might not like the answer, but you'll get an answer.

There will be people that say that they didn't have their say. I don't know what say you can have, you want. You have an earthquake, you have a difficulty, how do you deal with it? More money? More this, more that? You know, it's a power struggle.

Now, we have an election going on, and I have to say that I'm running for city council, so it kind of has a bearing on that. And it's — right now, I'm in the role of a Chamber director. So, I don't know if I answered your question.

So, it's ambiguous in one sense, and yet it's realistic in another. People are taking potshots, a great opportunity to take potshots. It's ideal. How many people get a chance to get quite a bit and take a shot at you too?

CHAIRMAN CLUFF: Mr. De La Cruz, we're very pleased with people like you and your leadership coming in to give us your views.

We do have on the schedule Senator Mello, for 9:30. It is 9:30. Could we hear Senator Mello, and then come back to the Chamber of Commerce and continue? We want to get as much as we can on the record.

MS. SHAFFER: You'll then have Mayor Murphy, at 9:50. I know that the protocol is that when a senator comes in, the senator gets the microphone. So, whatever you'd like to do, I will sit and wait.

CHAIRMAN CLUFF: Thank you very much.

Senator Mello, could we have you come up to the table?

If we could have Senator Mello come up to the —

MR. GOODFELLOW: He's coming, sir.

(Pause)

SENATOR MELLO: Yes.

CHAIRMAN CLUFF: Senator Mello, we're pleased to have you here. You can sit at the table up here with the microphone, and we have received — welcome to the Commission hearing.

SENATOR MELLO: Oh, thank you very much.

Either one here?

CHAIRMAN CLUFF: Either one is fine.

We have received your printed version of your testimony, and we appreciate that very much.

The purpose of these meetings is to allow various individuals to put on our official public record their views and testimony, and we would like you to be as brief as possible, to hit the highlights in terms of what you think we need in terms of the Commission's activities that will improve seismic safety for not only the area that was heavily struck, here near Watsonville, but other parts of California, in terms of learning about what worked, what didn't work, and how we can improve the process and the end result.

So, please —

SENATOR MELLO: Excellent. Thank you, Mr. Chairman and members of the Commission and staff.

I really want to welcome you here to Watsonville. This is my home. And we suffered such a devastating disaster here, as did the entire County of Santa Cruz and, as you know, the entire disaster area. And it was a — and, I think, your being here, we want to — hope we can learn from what happened and try to — try to set up a situation where we can avoid that in the future.

And I will just highlight my remarks and cover just several areas.

The first one I want to cover is communications. And I want to first say that our two radio stations here in the county — well, we have more than two — but KOMY, right here in Watsonville, and KSCO in Santa Cruz went into the emergency broadcasting system. They did a tremendous job. One reporter was on duty for 54 hours, and that was our length of time finding out what was happening.

But I think what we learned from that is you can't put all your eggs in one basket, because we saw, in the Bay Area, KGO and KCBS both losing their towers. And I think —I'm talking to people here in the broadcasting business that are developing an emergency broadcasting system that we would want to submit to, certainly, your Commission, and the Office of Emergency Services, and others, so that in the event of another disaster of this type, we have the flexibility of having not all concentrations in one or two centers.

And I think it's important. Communications certainly becomes, I think, one of the most important things, in order to help the people and bring in services.

At first, I thought the whole thing centered on the Bay Bridge and San Francisco and 880#, only to find out about two days later that the epicenter was right here in Nicene Marks Park in Santa Cruz County, and the tremendous loss of housing and businesses that we have here.

Housing is the next one on my list here, and I think the statistics here will speak for themselves, that — and I want to say I've been a county supervisor for eight years, and now in the state legislature for my 13th year, and what we saw here, that older buildings, built with the code, building codes in effect at that time, suffered the greatest damage, the brick buildings, and especially — and chimneys were just about unanimously knocked over, which tells us something, I think, that the use of bricks — the use of — well, we have to do several things.

We have to go back in and retrofit, and that's another one of my suggestions here. But buildings that were commonly built on what we called mud sills in the old days, just on a redwood mud sill, later on we put them on cement blocks, and then, as time goes on, we jack them up, put a foundation underneath. The ones that had a reinforced foundation, that were bolted down and secured, were able to withstand the shock. The ones that were not just got knocked off of their foundation and received tremendous damage.

But I would point out that the buildings that were built more recently, where we have approved in the legislature, both federal and state, stricter standards for buildings, were able to withstand the shock. Witness San Francisco, for an example, with many high-rises that came through pretty well, with the exception of just some minor damage.

So, what I'm saying to my colleagues, we just have to move forward again, and we're going to be looking to your Commission for recommendations of improving, once again, the Uniform Building Code and the standards that can withstand this magnitude, and certainly one greater than that.

The other area is even mobile homes that were placed there — we lost, in one part, 85 percent of the mobile homes that were just on the frame, and not attached to a foundation. It started whipping, and they collapsed, and they shorted out the electricity, and the gas ruptured, and they burst into flames.

So, there, again, I think — and I happen to be on the Select Committee on Mobile Homes — we'll be working, ourselves, for — to try to come up with standards to help protect mobile homes as well.

Businesses in this area suffered a tremendous loss. The Watsonville street that you're meeting on right here, the business section just about got wiped out completely. Santa Cruz, Pacific Garden Mall is the same. These were older buildings.

I have a bill to use — the Mello-Roos Law, that I authored with Assemblyman Mike Roos — and has already sold $1.7 billion worth of bonds — to be used for retrofitting for seismic safety. And it just happened the governor vetoed it two weeks before the earthquake.

But we're in discussion with him again, and we're going to try to use that as a means of going back in and trying the preserve businesses and buildings that are — that can be retrofitted, as we did with the State Capitol back in 1976. We spent quite a bit of money, but we built a shell, a frame, right over that Capitol. And I happened to be in the building that day at the time of the earthquake and didn't — well, it shook a lot, and the chandeliers were swinging, but it, you know, came out pretty well.

Some other, probably, business that's not in your category, and that is the Small Business Administration loan granted for businesses. We've had 30 businesses here that exceeded the $500,000 loan, and we're trying to work with Congress to try to get the $500,000 cap raised. You'll hear testimony here today from many — like Ford's Department Store — their losses are about $20 million, and they're having a difficult time trying to get rebuilt unless some loans can be forthcoming.

Well, transportation is another one that I want to cover just briefly. And I was driving back to Sacramento that evening; it took me seven hours here, but thanks to the radio station, I was able to find out what was open and what was closed. But I did get trapped thinking Highway 17 was open, and I got in traffic there, and I finally came around on 152, and Hecker Pass was closed, 129, Chipman Pass, and had I not been a native here, and not knowing the back roads, I probably would have spent even more hours. But I had to go near to Salinas and cut back, come into Watsonville. The power bridge was closed, and Highway 1 was closed out by Strough's Slough, and I had to use the Murford Crossing and zigzagged around.

But we're too dependent, here in this area, on vehicles. And even though we have many routes coming in here, including Highway 9 — Highway 1, going up to San Mateo and Half Moon Bay is about the only one that was — didn't receive damage. And even now, we have 23,000 commuters going over Highway 17 that commute daily into the Silicon Valley, and that road is still not open. It's expected to be open on the 23rd.

We — the state did authorize the running of CalTrain down to Salinas, but that was terminated last Friday, against my objections and that of Congressman Campbell and others.

But we just have to develop a transportation plan that has the viability of alternatives. You see how BART came in during this disaster, where they were moving a lot of people into San Francisco. We rented a ferry boat to help to some extent. But I think alternate forms of transportation, and less dependency on motor vehicles, and developing a good transit system certainly will help. And carpooling, of course, becomes of major importance as we move in that direction.

Well, two things — and this is my final points —one is retrofitting, as I mentioned earlier, and this is a job I think your Commission can help us with, is to come up with a program so we can go in and look at areas that — and buildings, especially, that could not meet the proper standards, and come up with programs for retrofitting that we can go in — because it's a lot less expensive to retrofit and try to save a building than it is to see a beautiful building destroyed, many of which were even concrete and steel that could have been retrofitted and preserved, had we had the capacity.

And I think your Commission is very well respected by everybody, and a recommendation that would come from your Commission, I think, would be one in which we in the legislature would certainly give a lot of credibility to, and I think the citizens would as well. That's one point, to go in and deal with what we have and try to retrofit.

The second one is the one I touched on briefly that I want to just re-emphasize, is that we came through very well with newer buildings, meaning that our Uniform Building Codes have been brought up to standards that were able to withstand this magnitude, 7.1. But I think we have to be mindful that there's been other shocks in the magnitude of 8, and they could be recurring.

So, I'm willing, as a legislator, to even get tougher with the new standards, to make sure that new construction will have to meet the tougher standards, which will be in the interests of the public. It'll be in the interests of the owners of these buildings to make sure they can meet the kind of standards that can withstand even a more severe shock than this one here, that not only was this devastating physically; it became devastating mentally.

And, again, I thank you for coming here, and if you do have any questions that I can try to answer, I certainly will try to. Thank you.

CHAIRMAN CLUFF: Thank you very much for being brief in your summary of the written document you left with us.

I'd like to cover two points before I open it up for general questions.

One is, before you came in, we heard testimony about some frustration and difficulty with the emergency assistance from OES and FEMA. We don't — that's an issue — we don't know what the situation is, but it sounds like someone in your capacity, in your office, could be of help to the local citizens here in Watsonville, to look at the issue of perhaps extending the deadlines for looking at financial aid. Apparently, within the next few days, that is going to end. And it sounds like there needs to be a bit more flexibility.

Could you have your office look into that and provide whatever assistance to the local people?

SENATOR MELLO: This morning we're going to San Francisco to add some additional help in our Santa Cruz office. After four weeks now, we got so far behind because we have had, as other legislators' offices, had a lot of calls coming in.

I did a little FEMA-bashing last Saturday, and I'm not quite ready to repeat that, but I do want to say that it's been frustrating dealing with all of the agencies, FEMA, and OES, which is the agency that authorizes — FEMA — and this is my fourth disaster that I've gone through with FEMA, and I just dreaded doing this again — they are better administratively, they're more on computers now that — well, I think they're all on computers. They have a single form to fill out, rather than a multitude of forms. There's more cooperation between the agencies.

But the frustration I've had with them is — I mean, here's a disaster — I went back to Washington with a delegation and we were told, "We're going to do humanitarian aid to help people who were displaced from their homes and businesses." And yet, these agencies will — like bring in an administrator for housing, and bring in another — they'll say, "Let's do it," and want to do it, and you reach a point where there's one item, one little thing, that seems inconsequential to me, because I've been a — I've been in business, that's my background, and I have to make decisions.

And to prove the roof is leaking, you go in and fix the roof; you don't go through a lot a red tape. So, that's where the breakdown comes. FEMA, OES, and others say, "Well, we can't do this," or "We can't do that." And it's always something.

You wonder — like, they have forms that are only in English, when we have a tremendous population of Hispanics here that are — many of which are not English-speaking. We finally got them into bringing more translators and more interpreters, and they're finally bringing forms down here that were printed in Spanish.

But I guess — well, first of all, I think you have to understand, as you do, certainly, a devastation of this type leaves everybody in a mental frame of mind that is one of great aggravation, and you're very tempted to lash out. People lash out at me, as a senator, because they know I'm a — from government, and if I'm there in a situation, which I have been, they just lash out at me, and I just sit there and listen, hear them out, because I think that's important.

But we haven't been able to really turn the corner and just say, "Let's do it," and get the job done.

And we've had about four or five items — I don't want to go into that detail, but we've had four or five little projects here — like, they claim, the flood plain, we can't put it here. There's been no flood there for 200 years. Like a trailer, if you brought in a trailer, and suddenly the river started rising — I went through a few floods here — you'd have 24, 48, 72 hours. You get Ford Ord to come in, or somebody, to put the trailers and lift them up to higher ground. It seems to me that's practical.

But with them, their solution is not put them there, or build an 8-foot-high frame to set a trailer way up off the ground. I mean, it's just unreal, the red tape and bureaucracy we've run into.

CHAIRMAN CLUFF: Thank you.

One other question I'd like to ask — and we appreciate your concern about the retrofit program, and we know and have worked together in the past on these items — as you're aware of the unreinforced masonry program that the Commission has been sponsoring, looking at the very most vulnerable types of buildings, is we have an ordinance that, by the 1st of next year, 1990, all city and county groups need to prepare and submit and inventory and a plan to improve those seismically hazardous buildings. And we're also interested in looking at other classes of buildings that need to have legislative activities to help upgrade those.

Could you tell us — we have heard rumors and so forth, but don't know from first hand — how the City of Watsonville is doing toward their inventory, and other surrounding communities, in terms of meeting the Unreinforced Masonry Act?

SENATOR MELLO: As far as retrofitting businesses — was that your question?

CHAIRMAN CLUFF: Well, it's looking at the class of buildings that are unreinforced masonry, and every city is required to prepare an inventory and to lay out a plan on how they are going to improve those buildings. It's not an easy thing to do, but how are we doing in this city, and how did those buildings —

SENATOR MELLO: Well, I would say this, you know, I think the facts are here, and we can — and no doubt you'll be touring the area — there was a devastating effect here to buildings, as there was over in Santa Cruz, and I think — well, first of all, there was a one percent vacancy factor.

So, from a landlord's point of view, you have a building there that's old and not too structurally sound, but there's five people that are willing to rent it, so you're not too willing to say, "Well, let's put $10,000 into the trash," because then, if you put money into it, you've got to raise the rent and you may not be able to get it.

So, from that point of view, I think the City of Watsonville, and I think most cities, including Santa Cruz and others, have not been aggressive enough in code enforcement. And you can see — these buildings are out there, because they're not on proper foundations; they're on — as you can see now, several were put on foundations just recently, but they were not really tied together in a structural way that they could have been.

And the City of Watsonville has — we have a real housing shortage throughout the whole county, and we have a lack of affordable housing — I think they learned a tremendous lesson from this disaster, as all of us have. And now they're working on a new plan for rebuilding downtown and going out trying to rebuild and rehabilitate the housing that's been damaged.

But if you look and see the buildings that survived, and you'll see them intermixed with those that were destroyed, you can see the difference. Those that were properly retrofit and built in a sound manner were able to withstand this. So, the ones that were not have collapsed.

Now, who's to blame? I don't know. If you want to put the blame on the City, or maybe us in the state, I think we've given — or we can give the police powers to local government, for the public health and safety, for them to go in and order work done of this type. Whether we've done that adequately or not, I don't know. Maybe your Commission can help in that regard as well.

But, certainly, I for one am going to be a lot more aggressive in delegating those powers to local government, to make sure that some wise expenditures in retrofitting will save the type of disaster that we just witnessed.

CHAIRMAN CLUFF: Thank you.

Hal?

COMMISSIONER BERNSON: I have a couple questions, Senator.

The first one is, speaking of retrofit, some time ago, the Commission adopted a standard that was an impossible standard for local governments to use in compliance with SB 547. I just wondered, in light of what's happened, the 547 does not require anything — any specific requirements as to standards. Is it possible that the state might now, in light of what's happened, enact as part of the Unified Building Code a set of standards for retrofit, similar to what the Commission has recommended some time ago? That's the first question.

And the second question is, you mentioned delegating to local governments powers to do what is beyond existing code. Recently we had a state attorney general decision or opinion which stated that local governments may not enact legislation which is in excess of the state code. That was in response to the shingle — wood shingle roofs industry's pressure because of the City of Los Angeles ordinance banning those roofs.

Senator Campbell, I believe, was ready to author legislation which would change that, but now that Bill's retiring, perhaps the State Senate or yourself or the legislature would consider that type of legislation, which I do believe is necessary, not just for seismic purposes, but for fire, flood, and other specific local needs of local government.

So, I wonder if you could answer those questions.

SENATOR MELLO: Yes. Your first question, on whether or not we've looked at that, I would say yeah. Even though the disaster hit seven major counties, it hit weird. Just a few years ago, it's been — if you look at the fault lines throughout the state, hardly anywhere in California and many other states are safe from the kind of magnitude that we — so, we are very definitely going to be looking at newer standards, because we have to.

I mean, I think, myself, in public office, if my response is just the status quo, then I'm not going to be around long. With another one, people will say, "What have you done to help reinforce the standards that we have?"

Now, when I said "delegate," perhaps — I'm mindful of the attorney general's opinion — and it's true, local government cannot go beyond those standards set by the state. But I think what we have to do is set the standards in the Uniform Building Code to be met, and then the city and county become the implementing agency, as they do implement the building code.

COMMISSIONER BERNSON: So many of the local communities have different types of needs, where fire danger and so forth — and I think they did do that, in permitting seismic reinforcement, by the way — there was legislation passed in the late '70's that permitted, Los Angeles, for example, to pass our reinforcement ordinance in 1981. But just recently, I guess just this year, the attorney general issued the opinion to try to, apparently, counteract our legislation on the flammable wood shingle roofs.

Now, it's very obvious that areas like Los Angeles may need that type of protection; other areas may need other protections which are in excess of the Unified Building Code. And I would suggest that you might want to take a look at that. It's very important.

SENATOR MELLO: We have had to look at that, because we're a big state, with 20 million people, and we're geographically very big. We have to make sure we can meet the needs of all of the communities. And you're right — look at this one and not try for the other.

I think there's a way of getting legislation passed that could accommodate the needs of all of the cities and counties.

COMMISSIONER BERNSON: Thank you.

CHAIRMAN CLUFF: Fine. Thank you very much.

One more question, Keith. And can we keep the question short and the response short?

COMMISSIONER UMEMOTO: Senator, Senator Alquist also wants to extend his appreciation, as well as the Commission's, for your efforts in the earthquake, particularly your trip to Washington, D.C., which — on your trip to Washington, D.C., as we all know that the federal government has a limit of $250 million in aid to disaster relief, and I'm sure your efforts in Washington, D.C., were real helpful in exceeding that $250 million by more than ten times.

You had mentioned about Senate Bill 1088, and I think that's an important piece of legislation. What is your prognosis of getting a similar piece of legislation passed this current legislative year?

SENATOR MELLO: Well, thank you for your remarks. And certainly, Senator Alquist has been an early-morning person and has been, in seismic safety, for many, many years. And I guess we probably haven't listened to him as much as we should have. But he's been right on target.

But let me say, 1088, the bill that would allow — and incidentally, the City of Santa Cruz is the one that asked me to introduce this bill, which would allow use of the Mello-Roos Act to retrofit and refurbish property for earthquake safety. There will have to be a 100-percent vote of the property involved for it to take place.

Now, this was — and as I say, the — I already introduced it in the special session, and what I did, I brought it — and we're having some discussion with the administration — I think it's a way for people to get funds to build and rebuild their own buildings, and it will not cost government, state or local government, much money.

I really — I expanded it to include reconstruction in the disaster area only, in those seven counties and those other cities. And also, statewide, the retrofitting will still be allowed under the Mello-Roos Act. The reason for limiting the reconstruction is that its application wouldn't be applying throughout the state.

And what I see is, this would be a tremendous help to businesses that exceed their $500,000. They can go in collectively, with other businesses in the same area, and vote in a Mello-Roos district, which would then be authorized to issue these bonds, and the bondholders — bond companies would then authorize that, and they would have the funds then to rebuild their buildings.

And if it was for retrofitting and safety, again, it takes a 100-percent vote if it would apply. And I know the City of Santa Cruz was really aware of their own shortcomings in shopping area, asking me to do this. They basically saw a lot of brick buildings built at the turn of the century, and therefore, they thought they could use something like this to retrofit.

So, we're coming back with it, and we'll have to have some discussions with the administration. My — and he was here a few times in this county looking at the damage, and President Bush was here, as was our United States Senator, Sam Skinner, Department of Transportation, and others. So, I'm just hopeful that the administration will see this as a very positive move towards meeting the needs of this retrofitting and the reconstruction that must take place.

I just want to say one thing. The spirit here of the people in this county and this whole disaster area — I mean the Monterey area — I'm not that aware of — but I think it's the same in San Francisco — we are committed to rebuild our communities and our housing. And I don't know anyone that's not fully committed. And whatever it takes to do it, we're going to do it.

CHAIRMAN CLUFF: Thank you very much, Senator Mello. We want also to extend our congratulations to the togetherness that most of the communities have experienced. And while emotions sometimes get in control, I think the overall end result has been very positive, and we need to continue that togetherness to get on with improving our recovery in the long term.

Thank you very much.

SENATOR MELLO: Thank you very much.

CHAIRMAN CLUFF: Charlene, we'd like to thank you for your patience, and if you'd like to come back up — okay — whomever you'd like to have speak from the Chamber of Commerce. We are a little behind schedule, and we'd like to keep things as efficient as possible, but we want to get the appropriate testimony on the record.

So, if you could introduce the gentleman with you.

MS. SHAFFER: Commissioners, the gentleman with me is John Fry. And John Fry is a principal with a company called CDM, Construction, Development, and Management, and is one of our more creative developers, and has some thoughts, and also is involved in a project that is looking at bringing back our 400 block after the quake.

MR. FRY: Ladies and gentlemen, I have brief comments, but a couple things I would bring to your attention.

We have been in Watsonville and have been developing since 1978, and we have built a number of buildings. Approximately, our projects are over $76 million since that period of time.

When we have problems like we're talking, sometimes there's a sense of overreacting. And I guess my comments are to give some perspective for what you look at.

And our buildings, having been built in the last ten years, have been under various UBC# codes, of 1978 through 1985 codes. All of our buildings which are either stick frame, stucco, tilt-up, or a combination of both, did not sustain any damage other than broken windows and a few cracks in the pavement or sidewalks in front of the buildings.

One of the other things is that we had also looked at various codes to look at — to upgrade to — it was my recommendation to look at the UBC code of 1973. This code is one, I think, that can make a building safe for people within the building. If you're trying to make buildings safe so that nothing will every happen, and windows won't break, and the ceilings won't have some problems, then you have made a building either very ugly or prohibitive to build, or a combination of both.

So, I'm just cautioning you that while there is a real need for some upgrades, these upgrades need to be held in a perspective that's affordable. And so, what I'm coming forward with is to say that it appears, through what we have done and other buildings in the state, that I would like to consider the 1973 code as the code that would be required for the upgrade, rather than trying to go to a current code or make a 1990 code that says, "Here's all the things we need to do to make it perfect." And you'll have perfect buildings, none of which can be affordably built.

And that is the essence of my comments to you today, and if you have any questions, that would be fine.

CHAIRMAN CLUFF: Thank you.

Commissioners, questions?

Yes, Randy?

COMMISSIONER PESTOR: I just wanted to point out that the structural engineer that's on the Commission staff, Fred Turner, had made the same recommendation, which is 60 percent of the '88 code, which ends up being the same as the '73 code, and that's been — was his recommendation at the League of California Cities and CSAC workshop last Friday in San Jose.

So, just to let you know that that, you know, appears to be consistent with what the Commission is, you know, recommending.

MR. FRY: Good. I appreciate it.

One other comment: I think the more you hear from that perspective, it will be fine.

Also, you know, it's interesting — I'm involved with a project in the City of Santa Cruz, and it's called the rehabilitation of the County Jail on Front Street to a museum. And it's one of the few buildings that showed little or no damage. It was built in 1938, and it's a WPA project and has a lot of steel, and it has a lot of concrete in it.

So, again, not all buildings, because they've been built prior to whatever date, like 1940, are, you know, buildings that have tremendous problems. This building has not — has a green tag on it after they've gone through all of it. And it was interesting, because we had appealed to the City of Santa Cruz about, oh, six weeks ago, about two weeks before the quake, and they agreed that the 1973 code of the City of Santa Cruz would be accepted for that particular public building.

And I think that's another indication that — not only did the building stand, built in 1938, but they were willing to bring it up to that code, which would take care of the shear walls and other things, which weren't needed, but I still think we would continue to bring it to that code and make sure problems didn't happen.

CHAIRMAN CLUFF: Hal?

COMMISSIONER BERNSON: I just have basically one question. You said you had some concrete tilt-up construction —

MR. FRY: Correct.

COMMISSIONER BERNSON: — that withstood the quake. Were those constructed prior to 1971 or post-1971?

MR. FRY: It was under the 1983 and 1985 codes.

COMMISSIONER BERNSON: So, those were after the Sylmar quake, when the standards were upgraded, then, in other words.

MR. FRY: Right.

COMMISSIONER BERNSON: Thank you.

MR. FRY: And no cracks at all in those buildings.

COMMISSIONER BERNSON: Okay.

CHAIRMAN CLUFF: Thank you.

Mr. Fry, let me just close by adding and emphasizing your main issue here, and that is how much are we willing to afford to upgrade seismic safety. And our main goal from our Commission is to protect the public health and safety. That does not mean protecting the investment.

Now, if someone wants to make an individual decision to put more money into a project to upgrade so that the investment is protected, then one has to go way beyond the codes to do that, but that's an individual decision and responsibility. We have to keep those issues sorted out so that we don't try to force everyone to have absolute safety. Society can't — is unwilling to do that.

MR. FRY: And one point I'd also add to that is that even though the post-1973 UBC codes does more than just safety, I think the record will show those buildings are in very good shape, with just a few minor cracks. So, I think you're going to have a lot of protection to the investment in addition to human safety and life.

Thank you.

CHAIRMAN CLUFF: Fine.

Charlene, do we have another —

MS. SHAFFER: No. John was the last one for the Chamber. I did think you'd want to hear some of his comments.

Also, I would just have one aside, that most of us take a long view here now, and that the worst is over. Where do we go from here? And John is one of the people that is really working as to where we go from here, and working on a project that will speak to many views in our community that has to do with bringing back our business community and its economic vitality, as well as providing housing opportunities in our downtown.

So, perhaps you'll be hearing more of this.

CHAIRMAN CLUFF: Fine. Thank you very much. We appreciate your coming here and giving us this testimony, and your patience in shuffling the agenda.

MS. SHAFFER: Could I just say a couple of more things in closing?

CHAIRMAN CLUFF: Sure.

MS. SHAFFER: One of the recommendations that we want to have, again, stating our absolute gratefulness for your coming to Watsonville, which there seems to be a reluctance for many people to do that, and I'm sure our mayor will reinforce what I'm saying, and we're just delighted that you came here.

We wish it could have been under better circumstances. However, come back in six months, see where we are, et cetera.

Like Senator Mello, I've been through a few disasters as a small businessperson — the flood in Soquel in '82 — and, yes, you're correct, there's probably not a lot anybody can do about FEMA than to continue to keep some pressure on how they react and how they react particularly to small business. What we try to do — and here's where maybe you can give us some help initiate.

FEMA can be, I believe, helpful in the short term, certainly to cities and municipal or county entities, governmental entities, and to people. The problem is the time constraints; same thing on the Small Business Administration loans.

We are — have embarked, as a Chamber of Commerce, on a large fundraising endeavor to assist our businesses get through the short term, so that they can rebuild, relocate, or reinvest in inventory, whatever is needed. We're had very little publicity, and what we've done — we've already had 12 requests for some funding assistance.

One of a couple of recommendations I would make that everybody might consider is — and I believe that Senator Mello's responded in part — is that the state might have a revolving fund that would kick in for disaster relief. It could be reimbursed at the time of the SBA# loans granted, or something else. So, that would be something that might be a creative way of helping our small businesses, rather than our trying, in a small community, to raise, you know, $150,000 or a million dollars, which is probably really what's need.

The second piece is — it's my observation that everyone under the circumstances did a real good job. I think, initially in the quake, individuals and one of your commissioners alluded to — Pat Snyder — that she was a nurse. I think the response to individuals in getting them food, clothing, shelter, et cetera, was really outstanding. What now has to be really looked at are the economic aftershocks to our community. And that is what I think is the missing piece here, and that's why I just want to at least put that thought out, because we have a lot of rebuilding and we have a lot of economic damage.

We're going — we have approximately 1,200 people out of work. We're going into the three highest months of unemployment traditionally. The economic aftershocks for a community of our size are going to be devastating, unless there's some assistance and unless we can regroup and get back in a real expeditious manner.

My second kind of just — that was a comment, but my second recommendation is that you seriously consider the implementation of some type of policy manual.

Our Chamber called Whittier about two days — we operated the Chamber — our building is one of the ones that may be demolished in downtown. It is really — other than our volunteers, our staff, and the community, it was really the only major asset of the Chamber of Commerce. So, we're looking at probably a $225,000 loss. We're not well financed. We really don't get public monies. We work pretty darn hard for what we do.

But what I think would be really helpful is if, in the future, for any other community, if you had some kind of resource directory, on kind of how to do everything you ever wanted to know about quakes, and perhaps more — would be real helpful, so that we could have been more helpful to our people in getting structural engineers here. There was a lot of time wasted.

And the demolition issue is important. I mean, the sooner a building does have to be demolished that it's handled, the better, because what's happening now by our sliding the process, is that it's affecting those business who are up and running. There's a perception of not wanting to come downtown, lots of things.

So, I kept thinking — and I do have — I will forward to you kind of some suggestions of what might be helpful. It has to do with communication.

We published out of my house a list of where people could go, what the emergency numbers were, et cetera. But what we needed for our business community was kind of structural teams that would come in, and perhaps, truthfully — let me be up front — be financed with some public monies. That would have been real helpful.

If the person or the merchant or the property owner disagreed with that report, they certainly could have had someone else submit — those kinds of resources, technical assistance — and I want to be on record that the Department of Commerce has been very, very helpful to our Chamber, and I think to our community. They are going to be providing us with some resources to do promotional endeavors so that people get back in the spirit of supporting our local businesses. And we're going to embark on that kind of campaign.

Anyway, I had — communications might be a part of that, scheduling of public meetings, technical assistance, and just getting the general information out on kind of what to do, when to do it, because I think that's critical. Some — for example, some of the FEMA dollars, I know, if they're not done in a timely fashion, cannot be accessed after the fact. So, this would be a real — and I think the Department of Commerce indicated they may be working on something similar, so you might want to coordinate.

And also, kind of how-to — we're getting a lot of requests from community groups: "What can we do to help?", you know, "Can we come up and do some labor on making buildings — doing whatever needs to be done?" That could be in your manual.

But, again, let me just close. I know the mayor is waiting and the city manager. Thank you for coming, and I will forward some written statements to you.

CHAIRMAN CLUFF: I'm afraid we've got to move on. We're way behind schedule.

Thank you very much.

MS. SHAFFER: Thank you.

CHAIRMAN CLUFF: We do have the mayor with us, Elizabeth Murphy.

If you'd like to come forward to the table, the microphone, so your comments can be on our public record.

Welcome to our hearing, Mayor.

MAYOR MURPHY: Thank you.

CHAIRMAN CLUFF: We're pleased that in your — what must be a very busy schedule in this recovery period, that you're willing to come and talk to us and share with us your experiences and how we might work together to not only help Watsonville, but this experience will be helpful to other communities in California in better — being better prepared for earthquakes.

MAYOR MURPHY: I want to thank the Commission for coming, and I want to thank the Commission for coming to Watsonville, because for a few days there, we were completely on our own. We weren't even identified on a map of Northern California as having suffered any damage.

I'll only take about five minutes, which will surprise anybody in the audience who knows me at all.

We had a unique experience, I think, in that people were not aware that we suffered a lot of damage — in my opinion, probably the most damage proportionately in Northern California. So, our staff had to take over everything, and I think the thing I respected the most was our emergency plan, which went as smoothly as it could under the circumstances.

The chairman of the emergency plan is our fire chief, who is very dedicated — and I'm not going to go into any of that, because you'll be hearing from him — and he had embarked on shelter committees before this occurred, he had been out to the schools — he really took the job very seriously. Each department head was assigned a role. The librarian became head of transportation, which was kind of new to her, and so on. And they'll give you a better picture.

My job was to come down to the parking lot in back of City Hall and proclaim that we had a disaster. Even in the face of emergency, you have to do something to legalize it, I guess. At that point, I discovered the generator wasn't working at City Hall, which means that we were even more cut off, communicationwise, as we were transportation-wise. We were practically isolated — Highway 129, 152, and 1 all meet in Watsonville. So, I declared the emergency situation. One of the councilmen and staff worked on the generator. And one thing I learned from it is that something should be done about having some equipment available in each locality, so that you don't have to go to Hollister for a generator, or — if you understand what I mean.

The hospital had problems. The hospital is outside the city limits, but they depended on the City of Watsonville to help them out, and it ate up enormous amounts of time. So, there are certain things that I — I went through the earthquake, after all Gary Smith's instructions, without batteries for the radio. I spent the first half-hour before coming down to City Hall after the earthquake —and recognizing we were still alive — sweeping the glass away so that we wouldn't end up in the hospital. And then I, of course, came downtown.

But the staff will get into how they activated the shelters, they — it was just a phenomenal task. They worked 16 to 20 hours a day, and this community ought to be very grateful to them.

So, I won't take up any more of your time, because you will be hearing the nitty-gritty from them.

CHAIRMAN CLUFF: Well, Madame Mayor, if you could just stay there for a moment, there could be some questions that the commissioners would like to ask. Bill?

COMMISSIONER WASTE: You mentioned that you were alone, and that I can understand, having sat not that far from here, up in San Francisco, and experienced the same shaking that you did. But it occurs to me that there may have been some sort of community plan, between the communities in this area. Did you have a cooperative plan with, say, Santa Cruz or other areas, so that you maybe might have been alone, but alone in your own area? Is there any cooperation plan that's in effect now?

MAYOR MURPHY: Well, I don't know about a cooperation plan. After the earthquake, we worked very cooperatively with the County of Santa Cruz, and a housing task force and — to identify legislation that would help, and I would have to add, I feel that the federal government and the state government have been very responsive. After the earthquake, when I looked at the map in a couple of papers and recognized that we weren't on them, I phoned Congressman Panetta, and from then on, we certainly got identified.

But actually, the road between Santa Cruz and Watsonville was not in good shape, and I don't know what cooperative action could have taken, which is why I think we should seriously consider having certain types of equipment that might be necessary when the power's off, when the — you know. After the earthquake, I think there has been cooperative planning on how to get out of this mess.

CHAIRMAN CLUFF: Hal?

COMMISSIONER BERNSON: I'd just like to ask what you're doing in the way of planning for recovery, as far as land use is concerned. What are the decisions being made? I heard somebody mention redevelopment before; they tried to put a redevelopment together for the downtown area. Are there plans to take another look at land use, for example, for the city, in your recovery plans?

MAYOR MURPHY: We have a long-term land use subcommittee of the council that was appointed, and we also have an ad hoc long-term housing plan. Housing has always been a desperate situation in Watsonville. People will say twenty years — I'll say forty years, which is when I came from San Francisco to Watsonville. I don't know all the reasons. I suspect some of them. But we've always had this housing crunch.

So, an emergency for us becomes amplified in the housing direction. We're also not a rich city. We don't have tourism to extract sales tax dollars from visitors. We kind of depend on our own region to support the city, so that of the four cities in the county, we are the poorest. On the other hand, we're a financial hub, we have the richest valley in the United States agriculturally, we have a lot of diversified industry here, some real big ones. And there's an awful lot of community spirit.

But to make a long-winded answer to your question, yes, we have long-term planning and suggestions that the council will be reviewing in the near future.

CHAIRMAN CLUFF: Thank you, Mayor, for coming before us.

MAYOR MURPHY: Thank you.

CHAIRMAN CLUFF: We'll move on to Bill Martin, Monterey County Emergency Services, and Greg Meyer, City of Salinas Emergency Services.

And you can both come up to the two microphones, and try to keep things moving as quickly as possible.

Welcome to our hearing. And, Bill, I suppose we'll let you go first, if you could keep things very brief and to the point.

MR. MARTIN: Well, I'll certainly try. Thank you.

Mr. Chairman, the commissioners, thank you for allowing us to speak before you today. Certainly, Monterey County, what I represent and Greg, representing the City of Salinas within Monterey County, was — both areas were impacted tremendously, not to the extent that Santa Cruz, San Benito, or the areas in the Bay Area have been. Nonetheless, we're looking at something between $60 million and $100 million worth of damage, structural damage, primarily in loss of contents.

That's something that we're going to have to deal with, and we are dealing with it in a forthright manner. We've established a recovery program. We're investigating land use requirements. We're looking at long-range planning issues, certainly the Uniform Building Code, upgrading if necessary, the adoption of a newer version of the UBC — a number of issues that we're looking into so that the next time this happens — I want to make sure that that point's clearly spelled out — the next time it does happen, that we're more prepared than we were this time.

The earthquake shook us up in a predominantly small area of our county. The northern portion, just across the Pajaro River, was the most impacted area, the Pajaro area itself, and in the area called Moss Landing. Together, we lost — well, we've had a significant loss to single-family dwellings in the Pajaro area, and a tremendous amount of damage in the Moss Landing area, including the state marine lab that's located there, which was, to the best of my estimation, totaled.

The City of Salinas has experienced approximately $20 million worth of damage, and I'll let Greg speak to that a bit more.

Other portions of our county were surprisingly spared, due to the inconsistencies of earth movement and other problems associated with earth movement. We were very fortunate, and I feel very fortunate, that we recovered as quickly as we could. Our major problem was confusion and some panic generated by the loss of electricity for almost 30 hours. Thank goodness PG&E is a very responsible utility, and the resources to bring themselves back up on-line in a very quick manner, which certainly assisted us. We would have had a lot more problems if the blackout or loss of electricity continued longer than it had.

One of the things I'd like to talk you, just a little briefly, and then I'll like to turn it over to Greg, and then I'm sure we'll entertain questions, if we might — first I want to talk about FEMA and the state OES-bashing. And I'm not going to sit here and say that there aren't problems, because that would be counter-productive. There are problems, there always are problems in disasters, and I will be the first one to say that every jurisdiction, whether it be the federal, state, or local levels, incurred problems. We experience them, and that's how we learn, and that's how we, hopefully, better the system.

What I hope we can delve into is the need for communication and better coordination. And that is always a copout we all tend to place in do our coordination in our plan, while nobody's listening to us. Well, I think people were listening to us, and I think they've had to listen to us.

But I think we've also lost sight to the extent that this is something that was bound to happen. We were going to have an earthquake at one time or another, whether on this fault or on another fault or in Southern California, but in the mid-portion of the Bay Area, we were very, very, very fortunate.

And having been in the emergency services end of things for many, many years, I can see that we are not prepared as well as we should be. We don't have the resources, we don't have the personnel, we don't have the funding. And one of our major concerns is that we have nickeled and dimed the emergency preparedness issues and the momentum behind that for such a long time, it is just not —it is not sufficient to have one month dedicated out of the year where we all run about and scream and shout about earthquake preparedness. That's inconsistent — that's inconsistent with the threat. The threat is 365 days a year.

And as we saw in this earthquake, it can be very capricious as to where it strikes and who it strikes. There's nobody — whether it be San Francisco, San Diego, or even Salinas — that's exempt from any degree of impact from any type of disaster situation. And I think that the federal government and the state need to take a very close look at freezing — or releasing some freezed-up funds and getting them out to the local governments so they can better pass out the word. We need to get it to our constituents. The population needs to know what risks that they incur living in the great State of California, and we have to be able to tell them how they can prepare, because we don't have the resources. It just isn't out there.

And I'm afraid if the population just knew how poorly equipped local governments are to deal during major catastrophes, they'd be tremendously surprised and very, very, shall we say, agitated, more so than they are now.

I'd also like to say that during this time period, we have learned a great deal, and we're moving forward. I hold — I have a great deal of indebtedness to the public, for they — I've heard no complaints, but I have talked to a lot of people and spent a lot of hours on the phone and in person, but people have been just absolutely fantastic. They've understood it, they've rallied, I think, in all jurisdictions, not only in Monterey County, but certainly in Santa Cruz County and San Benito County and the Bay Area, which I've been involved with.

Additionally, I think that the people — the first responders have done a tremendous job, and that's an important concept. And we tend to forget the psychological aspects of this devastation. And it runs twofold: it runs into those that have suffered losses, whether loss of loved ones or loss of business or property, but it also goes on to those people that had to deal with the emergency themselves. And that's a backlash everyone had to deal with for many years. And I see it now, and I see a lot of people suffering post-stress trauma. And that's going to probably cost us and have an impact in early retirements.

And that's something I think that people need to start taking a look — a very close look at, as a side issue in the way of this disaster.

Apart from that, I would just like to turn it over the Greg and give him some — have him give you some idea of what transpired in the City of Salinas, which suffered more than many of our cities within Monterey County.

MR. MEYER: Thank you very much. I'm Greg Meyer, emergency services planner for the City of Salinas.

The seismic studies that we had done within the city pretty well identified the areas that were most at risk within the city for a major earthquake. And most of our damage followed right along the seismic zone. It was fairly clear where we were able to expect the damage, and it was also fairly clear to us that most of our at-risk buildings were in that zone. And it proved true in the earthquake. We had seven major masonry buildings in the downtown area that had to be demolished after the earthquake.

We had some liquefaction problems, but not as much as we expected because of our subsoil conditions. We were very thankful at how light we actually got off, with the $15 million to $20 million of damage. It could have been a lot worse in injury and loss and suffering.

The issues that I'd like to present to the Commission today is on — I think that a major problem — the major problem that jurisdictions had in this earthquake was lack of planning. And we've heard a lot of testimony about planning and, yes, we have a plan, but I'd like to submit that most of the municipalities that have plans only have part-time personnel functioning in that planning position, where they are there as an additional duty, and it's just something that is talked about, and that's about as far as it goes.

I hear a lot of people come after FEMA and come after the state OES, and I would like to say that we were very, very pleased with FEMA's response to our city. Partly, we got a very good response from them was because we planned for that ahead of time, that we knew that there were certain requirements and there were certain procedures that you had to go through in order to get a response.

A lot of communities that complain about federal and state response have never taken the time to plan ahead on how they are going to institute that response in their jurisdictions, and then they're flying by the seat of their pants during a disaster, and they're surprised at the things that will be required of them.

I hear a lot of businesspeople that are asking for more information, more this, more that, and I'd like to state to them that there's a tremendous amount of information available to them, a tremendous number of conferences that are put on every year to provide this information, and I see just small response by the businesses. Even in my own community, where I go out and try to make contact in industry, when I get out there and I ask them, "Well, what do you want to hear? Do you want to hear how it really is?" And they always say yes, and I never get invited back.

And that's because the reality of planning is not something which people want to take a look at. I've been told for years and years — or for years in this business that after a disaster, everybody's going to be looking for somebody to blame. And that's exactly what's happening. They're just — they're going out and they're going after FEMA and the state because they're very visible, and there's definitely some problems there. But what they're asking for is for, you know, the federal government and the state government to produce a miracle and make everything okay within a couple of weeks' time. And that's just not going to happen.

And I think that a lot of their frustration is brought on by the municipalities' lack of planning themselves, of preparing. A lot of people have done some disaster planning where they deal with the present situation, or during the disaster, the response time, but very, very few have really gone beyond that and worked out their damage assessment procedures and connectivity to FEMA and OES.

And I think that this is — I think this is a major problem in our preparedness for earthquakes in this state, is the lack of dedication of municipalities and governments to this planning effort. We get a lot of talk by politicians, we hear a lot of rhetoric come flowing out, but when it gets to the closed doors behind that, the support and the dollars are not there. And that's why we have a tremendous amount of assigned duties in emergency services, and not professionals that are in the job working full-time.

And I think that this is going to have to turn around if we really expect to make any kind of headway in planning for disasters ahead. We do — we do really well in our responses to disasters, and that's solely because our public safety forces are used to responding to emergencies and dealing with the situations as they arise. And they're the backbone of our response. But as soon as that response is over, we have — we have public officials that are supposed to be in charge, making statements about, "Well, I think I was supposed to be over here," or "I'm in this job, but it's new to me."

And that, I think, is a big mistake. I think it should not be new to them. I think they should have been exercised, I think they should have understood clearly before what their duties would be, everybody should know what their responsibilities are going to be, and this can only come about by a real concerted effort at planning and training, into your plan.

And so, I think FEMA's done a great job. They've been there for us, at the City of Salinas. They've come through in every area. I'm not pleased with some of the things that we have to do and some of the areas that we have to go, but I knew ahead of time I wasn't going to be pleased with it. But I knew — also knew that I had to do it. And so, I just want to put in a vote for FEMA and OES, and I think they've done a tremendous job under the situation, under the circumstances. And I think that they could be — they could do ten times what they've done now if they could be supported by the local governments in the way and the kind of support that they need in the planning to be done.

Thank you.

CHAIRMAN CLUFF: Fine. Thank you very much.

Perhaps there are questions from the commissioners.

Dan?

COMMISSIONER EBERLE: It's not necessarily a question, but I do want to state I think you both made some very, very valid points, especially concerning the prior or advance consideration that the elected officials give to the emergency management plan and preparedness and the commitment to that process with funding and backup for funding. In many cases, that just isn't there, and in many cases — the points you made — that the emergency management people are going, many times, after something happens. I think those are valid points.

What I would like to know is — maybe I'm taking your prerogative, Mr. Chairman — but what can the Commission do to support the efforts of emergency management?

MR. MEYER: I think that probably an area that could really be approached is on the political area, with the — at least at the city council level. I think that the lack of — the kind of things that I heard coming down from the city council is there's no intrinsic value to a city operation for emergency services except in a disaster, issues like, "Well, we would rather have the trees trimmed than have somebody sit in an office in the basement and do planning" — to try and change their point of view — and I think this earthquake has given us a good opportunity, a window of opportunity, a small window, to address the politicians on these areas and try and them to see the positive aspects of emergency planning, that, you know, we do — the cities that have good plans are the cities that —that are responding much better than the cities that don't have plans at all.

How you're going to get that dollar value across to them, I don't know.

MR. MARTIN: I'd like to say something to that too, if I may.

One of the major problems with disaster preparedness — and I know you are involved in that as well — is that a lot of local jurisdictions and counties do not understand that their single biggest liability issue is a disaster, the absolute single biggest liability. We're not going to lose money or constituent support or anything else on a grander scale than as a result of an earthquake or another large-scale disaster.

And until that point is brought home, until we understand the significance of that type of an impact — until we understand that and until the elected officials understand that, we're not going to get that support.

I think the other portion of that point, the other flip side of it is that we have to professionalize the field of emergency management. The elected officials and the general public have to not think of us simply as people that operate in the dark confines of the basement and only come out when the earth shakes. It is a professional position that requires a great deal of knowledge and expertise, and that's something that we have to develop ourselves and promote. If people — if we can get the people to start listening to us, then I think we can effect some change at all levels, if that answers your question.

COMMISSIONER EBERLE: In support of that, do you work together on a fairly regular basis, the county and the cities? And how do you coordinate on those?

MR. MARTIN: We talk at least daily. In fact, we have a drop line between my EOC and the city EOC, and we use that regularly. And we meet, like I said, almost daily, either on the phone or in person. We have a very close relationship.

MR. MEYER: We exchange expertise in different areas. Where Bill has certain expertise in legislation and those areas that I draw on, and there are certain projects that I've developed citywide that we've expanded countywide because they worked so well.

MR. MARTIN: We had also established a tri-county emergency services association, a backup, if you will, that we would love to have implemented. Unfortunately, all three of the counties, Monterey, Santa Cruz, and San Benito, were impacted, so none of us go and effectively help the other at the emergency operations center.

That served to be a real problem for us as well, for almost every one of the jurisdictions was short on trained emergency managers. And we did not get the professional support we could have used. We were all wearing a lot of hats and very, very busy, and it made it very difficult.

That's one of the major concerns I have, is the system did not support local goverment in the emergency management function. They were supporting everybody else, but they forget the EOC's and the people trying to run the show. We just did not have the personnel, and that caused a real problem.

CHAIRMAN CLUFF: Thank you very much.

You focused on some issues that we as a Commission have been dealing with for some time, and that is, what level of seismic safety are we willing to afford, and how do we get the resources to do that? And then, even with that, there's no such thing as absolute safety. And so, how much risk are we willing to accept?

And you've provided some very valuable testimony that helps us understand that from your perspective, and others in this activity or this hearing provided other good testimony. And you made the comment at the beginning communications — that seems to be — or at least effective communication — seems to be a big problem, in that if people had known what programs were available and what planning that they could have done, we could have averted a lot of this. And, of course, we need the staff to implement those, to do the planning and implement the plans.

And so, this is very valuable to us in advising other municipalities on how they can avert some of the difficulties here that you people have experienced.

So, thank you very much.

MR. MARTIN: If I may make one closing comment, Mr. Chairman.

CHAIRMAN CLUFF: Sure.

MR. MARTIN: We have heard a lot of talk about this not being the big earthquake, and that's very true. I think that's a — I think we can accept that with a pretty fine degree of surety at this point. But what bothers me is that we will lose the momentum, and we're already beginning to lose it. That window of opportunity that Greg spoke of is closing very rapidly.

And I've even noticed in the local newspapers, which had run a tremendous amount of information during the earthquake, even today I can't find any stories on the earthquake, either positive, negative, or anything, the news media being what it is.

What I'm concerned about is that we are going to experience a major catastrophic earthquake sometime in the near future. And whenever that is, if it's five minutes from now, if it's thirty years from now, it's going to hit us, yes; I think that's a safe assumption. I just hope that we haven't lost the lessons learned from this, and I hope that we can go on and beyond, even further than we went with, say, in the 1971 Sylmar earthquake. That generated a lot of — a lot of intense activity. But we need more than just moving around; we need some real dedicated, hard decisions to be made, and some monetary commitment to that.

And I hope that can be forthcoming.

CHAIRMAN CLUFF: Thank you very much.

MR. MEYER: And I'd like to finish that off with a practical example of how we can support emergency services in this state, is to increase the funding from the federal and the state OES to allow cities to put professionals into the positions. Right now, our funding is at a 29-percent level, and that's difficult for a lot of municipalities to swallow, for the amount of work that they see required for that 29 percent. And they'd just as soon forget it, and that's basically the kind of things that we run up against as we try to work with different cities.

And thank you very much.

CHAIRMAN CLUFF: Thank you.

MR. MARTIN: Thank you.

CHAIRMAN CLUFF: The next speaker is Pat Donahue, with the City of Watsonville Recreation Department.

Pat, we're pleased to have you take time out of your busy schedule to come here and talk to us. And if you could be brief in getting to the point and telling us about how we can learn from this event so that, given future events, you and other communities can be better prepared and can take some measures that will improve seismic safety.

MS. DONAHUE: Thank you, Mr. Chairman and members of the Commission, for allowing me the opportunity to address you today.

I also would like to introduce to you Jack Smith, who is the Recreation Services Manager for the Recreation Department, who's sitting in the audience, who is — I will tell you a little bit about later, was directly in the trenches. So I thought it was important that he be here also.

Watsonville has a multi-hazard plan, and I'd like to tell you that it worked, and I'm here to tell you that basically it did. Not only do we take the plan seriously; the department heads and assistant department heads have been able to attend California Specialized Training Institute. Many of us have availed ourselves of that opportunity, and we took that training very seriously.

In addition, Recreation Department staff has gone through the Red Cross shelter management classes. That was a godsend to us.

We had five shelters in operation: the National Guard armory, the Veterans Hall, Freedom School, Ramsay Park, which became a tent city, the Santa Cruz County Fairgrounds, and we also had an unofficial shelter in Callaghan Park. Inasmuch as Recreation Department staff have gone to the Red Cross shelter management classes, we ourselves opened the Veterans Hall. In that the Watsonville Chapter of Red Cross is directly aligned with the Santa Cruz Red Cross, we found it necessary to intercede, perhaps, at times, to alert Santa Cruz to the facts that Watsonville's problems were more than miniscule in terms of dealing with the disaster, that the armory was insufficient as far as dealing with the downtown shelterees.

Jack and recreation leaders set up Veterans Hall using tumbling mats and those kinds of things to get it started. I was very proud of the Recreation Department staff in that effort.

During the course of the sheltering — and, of course, you know it's ongoing — we had approximately 845 bed occupants, and meals, 3,527, not including the mobile vans of the Red Cross. Currently, we are housing 257 in the shelters and serving 1,125 meals on a daily basis.

I was impressed with the Red Cross services, in that they are a small unit here in Watsonville. They responded as best they could. But inasmuch as we are a small city, and insasmuch as we have a large Hispanic population, I think the disaster pointed out the desperate need for local Hispanic involvement in Red Cross training. Language barriers, insufficient information in Spanish often became a hazard, and very costly in terms of time.

Tents were a particularly interesting issue, in that we had rain right after the earthquake. Tents and sleeping bags and cots were a vital necessity, and we had various pockets of tents develop, across the street in the 200 block, where there was a vacant area, in the back yards of homes that were either off their foundations or somewhat destroyed. People were in absolute terror of returning to buildings.

Any training that I have received, either through the Red Cross or CSTI#, did not explain to me that I was going to have a psychological problem to deal with, that I would have to deal with people who refused to go back into green-tagged homes, and that we would have to provide housing and tents. I think that was also new to the Red Cross, and they responded admirably to that.

After some eight hours of dealing with well-meaning politicians, who unfortunately often hampered the channels of communication in getting us those needed supplies and the manpower to pitch those tents at Ramsay Park Center, and, in fact, some delays in those tents caused further the entrenchment of some tent cities that are ongoing, particularly Callaghan Park.

Fear of uniforms was a psychological problem, in that our Hispanic people felt that they were being railroaded into fenced parks, and that perhaps the INS would be appearing, that they were being guarded by police on a constant basis.

I want to address some of the needs that the California Specialized Training Institute needs to address to further help cities and counties respond to disaster problems.

They need to deal with social issues, as they relate to language barriers and illiteracy. They need to tell us how to deal more with family outreach. We need minority members in the operations centers and the policy-setting arms of the operations problems and emergency situations. They need to stress that knowledge of the community is vital in developing the city's multi-hazard plan. We need to be aware of the medical clinics that are involved, and the church involvement.

We need to be aware of psychological issues, the fear of the police and the military. Another psychological that was interesting to me, having been, as was Jack, in the EOC from the onset at five o'clock — the transitioning of help into the EOC from well-meaning people from the outside. They were a godsend to us, but by the same token, we felt as if we had not been functioning properly for the last three or four days, or that what we had done was, at that point in time, being criticized, rather than being well-intentioned.

I am grateful for that help. But my first encounter with the outside help was, "How many people are in your shelters?," "Do you have this form ready?," and "How many meals are being prepared?"

At that time, ladies and gentlemen, I didn't care. All I knew is that I had people to house, and I had to get some food into them.

Changes in the Red Cross personnel also caused a problem, and I do feel that CSTI needs to involve people from the Red Cross. Small chapters probably cannot afford the training that is vitally needed, but the Red Cross needs to be involved in Specialized Training Institute classes so that they can help cities do the great job that they did, and that cities can be helpful to the Red Cross.

Shelter managers from outside of the City of Watsonville often came and called me and asked me to provide them with the milk and the food and whatever supplies that they would need. We had to establish and re-establish those channels of communication for the Red Cross personnel. That took up valuable time. Again, the need for Red Cross personnel in the EOC became immediately apparent.

I want to say in conclusion that I was particularly impressed with the outpouring of clothing and food and assistance from outside of the area, from all over the state. I was particularly impressed with the mutual aid from other cities, from the California Department of Forestry, the National Guard, the Army, the Marines, the Office of Emergency Services, PG&E, Red Cross, school district personnel. There were numerable people we can thank, and they were there, and we were proud to be able to serve with them.

I thank you for listening to me, and I'd be happy to answer any questions.

CHAIRMAN CLUFF: Thank you very much for that excellent testimony that we will find of great value to us in our proceedings.

Dan, you had a question, a comment?

COMMISSIONER EBERLE: Yeah. I was just wondering if you had shared your comments with CSTI and your suggestions.

MS. DONAHUE: Well, I haven't been given that opportunity yet, but I certainly would like to.

CHAIRMAN CLUFF: Bill.

COMMISSIONER WASTE: You've mentioned the Red Cross. Were there any other services locally that were of a assistance, like local churches, or the Salvation Army,
or —

MS. DONAHUE: I'm sorry. I did forget the Salvation Army. They were there. In fact, their distribution warehouse is one of the yellow-tagged Recreation Department buildings, so we worked very closely with the Salvation Army. And the churches have also been deeply involved. And I apologize for leaving them out of my report.

CHAIRMAN CLUFF: Are there — yes, Pat?

COMMISSIONER SNYDER: I just wanted to ask — in retrospect, after I left Watsonville, I was curious why the high school had not been utilized. Was it because of potential damage to the school? Why not use it as a shelter?

MS. DONAHUE: I think, Pat, at that point in time, being in constant communication with the school district, it was our belief, and certainly their intention, to open up school as quickly as possible. And we felt that, even though Freedom School was opened up Friday night and Saturday night, that to open up the high school, and then to have to shut it down so that we could get the children back into normal operations, would have been very difficult to do.

COMMISSIONER SNYDER: Were they aware of the legislation that states that schools shall be used as shelters?

MS. DONAHUE: I'm sure they are, and several of their school sites are included in our plan for sheltering. But we chose to use other kinds of public facilities.

CHAIRMAN CLUFF: Tom, do you have some?

EXECUTIVE DIRECTOR TOBIN: There are still people in shelters in the area. Is that right?

MS. DONAHUE: That's correct.

EXECUTIVE DIRECTOR TOBIN: What are the plans now for ending the sheltering? And do you have any? Do you have a timeline?

MS. DONAHUE: Nothing in terms of time is definite. We are looking at consolidation of all the shelters through the Santa Cruz County Fairgrounds where there are several large buildings. But we also have been able to again get, at the request of the shelterees, some tents, because they're still not comfortable going into buildings. We had relocated some folks from the shelters initially into migrant labor camps, and then, also, they're being given motel and hotel vouchers from the Red Cross, so we aren't putting them in our shelters.

EXECUTIVE DIRECTOR TOBIN: Did you have a difficulty here with people who were homeless prior to the earthquake?

MS. DONAHUE: Yes.

EXECUTIVE DIRECTOR TOBIN: And how did you deal with that situation?

MS. DONAHUE: I think most of our homeless enjoyed the homes of the Red Cross, and having to deal with it now is again an issue for the planning director and the housing —

CHAIRMAN CLUFF: Hal?

COMMISSIONER BERNSON: You mentioned that there were problems with politicians interfering with the process. I'd like for you to elaborate a little bit on that, and I'd like to have you tell me whether you have an ordinance, an emergency ordinance, that provides for either the chief of police or the fire chief or whoever to take command during the emergency, and how the political end of it interfered with some of those activities. I'd like to hear about that.

MS. DONAHUE: Yes, we do have the ordinance, and our fire chief is the emergency operations center chief. Most of us are fully aware of communications going through county OES and then through state OES. Politicians from outside of the area, not our local politicians, felt that they wanted to be very thoughtful, and they were making calls to the National Guard, and they were making calls to the Army, relative to procuring tents and those kinds of things. Because of conflicting — and several people involved in that kind of political process, we had to go back to square one, over one eight-hour period, and go through again the established channels of communication to get those tents.

Well-meaning folks decided that they were going to call the National Guard, and they were going to call the Army to get things done.

COMMISSIONER BERNSON: I see.

MS. DONAHUE: That just stalled the process.

COMMISSIONER BERNSON: I see.

MS. DONAHUE: So, we suggested to everyone that they get out of the picture and let us do what we knew we were supposed to do.

COMMISSIONER BERNSON: Thank you.

Those politicians, boy, I'll tell you — every time, right?

EXECUTIVE DIRECTOR TOBIN: Since the chairman's away from the microphone, are there any other questions?

COMMISSIONER SNYDER: I'd like to ask —

EXECUTIVE DIRECTOR TOBIN: Yes.

COMMISSIONER SNYDER: Did I understand your numbers correctly? Did you say that your original shelterees figures was 800-something, and you're down to two-something now?

MS. DONAHUE: That's correct. 845, and we're now down to 257.

COMMISSIONER SNYDER: I think it's important to note for the record that we're almost four weeks post-disaster now, and have not been able to close shelters. And this is a long-range sheltering problem that we need to look at statewide in earthquakes — very different than other disasters.

MS. DONAHUE: That's correct.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes. You mentioned about bilingual and bicultural type services being necessary in the emergency procedure plan. I was wondering if you could kind of articulate on what kind of example caused some problems in not having some bilingual and bicultural type services.

MS. DONAHUE: One of the immediate examples that comes to mind is, were it not for recreation leaders who are bilingual, bicultural, at the Veterans Hall, forms would not have been accurately filled out. There was an immediate need for shelter — Red Cross shelter people to be bilingual, because the majority of the shelterees were Hispanic. Orders need to be printed in Spanish. And I think it's vital, not only for the city, but for the Red Cross, to involve Hispanics and other languages in our present materials, and then the people that would be running the shelters.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: Yeah. What was the ratio between those that were chronically homeless and those that were homeless as a result of the earthquake?

MS. DONAHUE: I'm afraid I couldn't give you an indication.

COMMISSIONER WASTE: Do you have a sense?

MS. DONAHUE: No. I'm sorry.

CHAIRMAN CLUFF: Fine. Well, thank you very much for coming here.

MS. DONAHUE: Thank you very much.

CHAIRMAN CLUFF: The next part of the program is the city manager, John Radin.

John, can you come up to the table? And tell us what worked, what didn't work, and how we can improve things for the next one.

MR. RADIN: Well, actually, the system that the state and FEMA really have in place does work. It just takes a few days to gear up. That was — that was our biggest concern. And, of course, in the magnitude of this disaster, two days seems like a horrendous amount of time to start getting results.

But we were able to put everybody in shelters. We handled all the necessary items. And on the second day, things started to flow down from the state and the feds both. And by the third day, it was a smooth-running operation, as far as I was concerned.

It did what it was supposed to do, on all of our plans and all of the training that we had going, with the staff, which — I'd sent most of our staff, about six of them, back to the National Academy back in Fredericksburg, Maryland, and practically everyone except maybe one or two people hadn't made the training sessions down at the San Luis Obispo.

And it was a godsend, because it really — that training paid off, because everybody was just in there, and we worked — some of our staff didn't leave for the first —I know most of us didn't leave for the first three days, before we even got home after this disaster hit.

One big mistake I think we all made is not realizing that you've got to get the people home to be able — or get in communication with their families, because it was hard, not knowing what was wrong or if your families were all right or the homes. And that was the one big problem, but that was a hitch in our own plans that we should have planned for.

And I should have been aware of it, because it was also in one of our plans that — exercises that I went through down in one of these training sessions, that you forget about those little items.

I also think that the unreinforced masonry is — as it goes in there — I was here when you were talking to Senator Mello — the City was just in the process — we had an inventory of all the unreinforced masonry buildings. We were in the process of negotiating a contract with a structural engineer to go do an actual assessment of all our — be able to conform to the seismic safety law by 1990.

Well, as it turned out, we've had enough structural engineers going through town telling us which buildings are not — and most of the unreinforced masonries, I'll tell you, are — should be torn down, because they're dangerous as we go along.

I even have problems with some of the historical codes to allow using a lesser code. On here — this building on the corner here is a good example. They spent $440,000 refurbishing that building on the inside and making sure that it didn't collapse. And the code requires — and it didn't collapse on the inside. But structurally, on the outside, it's gone, from all the engineers.

The present — the City is the owner of the land and the building, with a long-term lease for the people out there. They leased it for 25 years and they wanted to build it, and we were going to rent it.

But structurally, even under those codes, that building still collapsed. And I was told by the major owner of that building on the lease that it would be $500,000 to rehab that building to bring it back to structural soundness.

Now, that's for a 6,000-square-foot building, 3,000 on each floor. There would be over a million dollars into that building. And from an economic standpoint, it just — it just doesn't make sense to spend a million dollars on a building and still not be able to — the rental income is insufficient to pay for that kind of structural soundness.

And I know that what we're talking, and the people that I'm talking to right now, what we're saying is, you know, we're going to be up — we're building it up to current codes. We're in the '85 code. That's what we're hoping to replace everything with.

And when they do remodel or replace, unless the law requires otherwise — and there's only four historical buildings listed on the register, but there's probably a lot more that could qualify — but I can see that going with lesser codes is not going to solve the problem when you get an earthquake of this magnitude.

And I know, for one — I don't want to see this happen again, and I don't want to be around when it happens in there, because just watching this thing and how we only killed one person is a miracle, when you look at the bricks on the sidewalks at five o'clock in this downtown. We had a lot of injuries, it's true, but only one death. And I call that just a small miracle.

CHAIRMAN CLUFF: So, you're available for questions, I presume?

MR. RADIN: Oh, sure.

CHAIRMAN CLUFF: Okay. Thank you.

I want to get your response to the issue — you may have been long enough to mention it — is the level of seismic safety that the public is willing to pay for and support, and then, on the other hand with that, some level of risk has to be acceptable, and your thoughts on how you balance that equation and convince the people that they have to be willing to accept some degree of risk, but they've got to be willing to put forth the effort to improve seismic safety.

MR. RADIN: Well, right now, among the people that I've been talking to, I think there's a good acceptance right now to bring them up to code. There's a few still that don't want to meet any codes at all, if they have to. They just want to — some people want to go in there and put some mortar back in or plaster the walls and hope they stay in order to hold the brick, like gum.

But that isn't going to happen if I can help it, because I think that — you have to balance it on an economic basis, because in some of these older buildings, even today, it's cheaper to — you can tear them down and rebuild them for a lot less cost than you can to retrofit these buildings to meet any kind of seismic safety any more.

And when you look at these bricks that people have told me, they said, "There's nothing wrong with our building; it's just cosmetic," but they start work on these buildings, and they're going up there and tearing them down, and they can lift each brick up one at a time from the wall, without any — without any hammers. That's how bad it is.

CHAIRMAN CLUFF: Questions? Bill?

COMMISSIONER WASTE: In the early stages, say, at 5:05 on the big day, how were communications handled? Did you have telephones? Did you have emergency communications?

MR. RADIN: Well, the funny thing about it is our telephones never went out. They were — they were in, and we were able to call. The emergency communications — the funny part about it, we've got a problem — we have, in this building, because it was built under the old — as an old bomb shelter, or in the old days when it was built, in '65, to withstand a 100 percent protection factor on a nuclear fallout, this building stood up fairly well.

We have an emergency generator in this building that functioned, but the one over in the police station, which was just redone and checked out, for some reason the batteries went dead. And as soon as we got new batteries on it, we were able to start. And we had full radio communications. We were just about —

we'd set up mobile deals on the outside from — with cars, so we worked for about two hours with our communications from mobile — from the automobile just outside of the police station.

The generator — we got the generator back on, the emergency generator back on, and we moved upstairs. And we ran on the generator for two days, and electricity was back on. From that point on, we had no problems.

But we were extremely lucky on that, as far as that phase of it.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Tom, I thought that on suggestions for retrofit, we're talking about 60 percent of existing code, which is the equivalent of the '73 code. And if local agencies start going towards current code or '85 code, you know, there's just likely to be a lot of buildings that are just going to be torn down.

EXECUTIVE DIRECTOR TOBIN: Well, that's true, that a lot of — the consensus within the structural engineering community seems to be to reduce the level of force for retrofit in projects to two-thirds or three-quarters of what the codes at this time would allow. And that would allow a reduction of the force level and allow more damage.

The figures that the city manager has just quoted us, $440,000 to retrofit a 6,000-square-foot building, is an extremely high number to not get better performance. That's $73 a square foot, and, you know, another $500,000 is nearly $85 a square foot. And those are very high costs.

COMMISSIONER PESTOR: And that's '88 code, or '85?

MR. RADIN: Well, that was the historic — State Historical Code. That was, I believe, the '73 code that the historical — because an item going on the historical register was not required to be brought up to — and that —the year we had that, I think it was the '83 or '80 code, or the '79 code, they were working at, when that was retrofitted.

EXECUTIVE DIRECTOR TOBIN: But the State Historic Building Code requires some expensive activities and that you use the archaic materials as much as possible. On the other hand, there are no structural standards in it, so that they can use a lower, lesser code, which is done, you know, on historic buildings and allowed by the State Historic Building Code.

MR. RADIN: But it essentially allows is you build another set of walls inside so nothing collapses on the inside, but the outside can just literally explode from the force and then crack.

CHAIRMAN CLUFF: Hal?

COMMISSIONER BERNSON: That's not entirely true, because some of the ordinances that have been passed, including the one, the model ordinance that the Commission has adopted, provides for reinforcing the outer walls as well as some of the inner bearing walls, so there are other provisions.

I just wonder how many buildings of the inventory that you had of the URM's, what numbers did you have, and how many collapsed, how many survived? Do you have any numbers on those yet?

MR. RADIN: Right now, I have a total of nine buildings that are going to be demolished, that the owners have said that, you know, "Our own engineers, our structural engineers, have said they are completely unsafe." And they are being demolished.

CHAIRMAN CLUFF: Thay are all unreinforced masonry?

MR. RADIN: And they're all coming down. You have the Masonic, the Oddfellows, the E.B. Lettnich, even one concrete building that was reinforced. That was all — on the rear portion, it was all concrete and steel-reinforced, but those walls sheared — you can go and grab a Number 11 rebar with your bare hands — there's no concrete left. It just —

COMMISSIONER BERNSON: Those were pre-1971 concrete, I presume.

MR. RADIN: Yeah, I believe so.

COMMISSIONER BERNSON: How many — did you have any URM's that survived? How many — you say you had an inventory — how many buildings did you have of the URM's that were — that were in the city prior to the earthquake?

MR. RADIN: I can't tell you because I don't have my building official now. Those are — I've gone through so many numbers right now that I don't even want to try to —

COMMISSIONER BERNSON: Had the City considered any type of retrofit ordinance prior the quake, after the inventory?

MR. RADIN: No. We had gone along with whatever the state codes had been, mostly the —

COMMISSIONER BERNSON: Well, the state code required the inventory and then some remedial action being taken by 1990.

MR. RADIN: Well, that's something — you have what? — five years after they're identified in 1990? They had to be identified and then there was a five-year period of retrofit.

COMMISSIONER BERNSON: Um-hmm.

MR. RADIN: But even — I don't believe that code even had enough teeth in it to really make the people go out and do something.

COMMISSIONER KOCKELMAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes, Bill?

COMMISSIONER KOCKELMAN: I want to congratulate you on your testimony. It's so refreshing. You have the materials for adopting the kind of things — and this is a great, you know, window of opportunity for you and for the City to adopt those kinds of ordinances now, before the window of opportunity closes.

MR. RADIN: I certainly appreciate that. We'll get — we'll have a building official get some of those.

CHAIRMAN CLUFF: Tom, did you have a question?

EXECUTIVE DIRECTOR TOBIN: Well, actually, I have something that engineer, Fred Turner, gave me to pass on to the City. And this is a code that the City of San Francisco has prepared after the earthquake to deal with some of the damaged buildings.

And I don't think it's — and I just skimmed it, and it doesn't answer everybody's problem, but at least if we can bring this down to show you what San Francisco did, without an endorsement, I'd be glad to give it to you as well.

MR. RADIN: Oh, thank you. We'd be more than happy to, because we're looking at things that — as I — you know, like I say, we don't want to go through this again.

CHAIRMAN CLUFF: Any other questions?

(No response)

CHAIRMAN CLUFF: Thank you very much for coming.

The next speaker will be Neil England, Watsonville building official.

Perhaps, Neil, in your remarks, you could address some of the questions that the city manager didn't have on the tip of his tongue. He's got other things he has to deal with, and perhaps you have some of the statistics that deal with some of the building stock and so forth, particularly the unreinforced masonry.

MR. ENGLAND: The unreinforced masonry —

CHAIRMAN CLUFF: But go ahead and make your statement —

MR. ENGLAND: Oh.

CHAIRMAN CLUFF: — and come back to that.

MR. ENGLAND: I don't know where you want to start. We could finish up on the URM's.

We're finding a substantial number of buildings that are damaged that didn't show up on the original survey, so I think we'll see the numbers change drastically in the next few months. We're going up on the roofs of buildings, finding broken parapets, roof systems that have pulled away from a brick wall. A lot of these things are taking a lot of time to track down. And buildings that we thought two weeks ago were green-tagged and habitable, we're finding the unrestricted use was ostensibly an error.

We did a preliminary survey of the town, where an estimate of buildings that would fall into the URM category is somewhere between 50 and 60 buildings, and this would be any building that has any URM infill, which brings the list up quite high. And then we're negotiating a contract with an engineering firm right now to do the program and help us form a mitigation program, which, for obvious reasons, we'll be very aggressive with at this point.

And the Bake Rite Bakery and the death of the lady is a perfect example of why we will proceed quickly with our mitigation program.

I do want to thank the state for their help with the CSTI training program less than a month before the earthquake that I attended — a very professional staff — and I think it helped immensely in our disaster.

CHAIRMAN CLUFF: Questions?

Yes, Hal?

COMMISSIONER BERNSON: I'd like to note, in your inventory of the URM's, how many were there in the city, and as up to

date now, how many have been condemned,
demolished —

MR. ENGLAND: We only have a preliminary inventory, where we estimated 50 to 60 units. An engineer will be going building by building to confirm those numbers. We have nine or ten that are hurt severely.

COMMISSIONER BERNSON: But you have 50 or 60 buildings?

MR. ENGLAND: Total, in the town. And that was an extensive survey. We covered every street, and anything that had any portion of —

COMMISSIONER BERNSON: But you hadn't done the inventory, then, prior to the earthquake, huh?

MR. ENGLAND: No. We did do the inventory. We did a preliminary inventory before the earthquake —

COMMISSIONER BERNSON: Before the earthquake.

MR. ENGLAND: — to establish the contract with the consultant firm. And he was to start the inventory about the time of the earthquake, which has been delayed, obviously.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Of the 50 to 60, what proportion were bearing-wall URM's?

MR. ENGLAND: I would — I would say 30 to 40 buildings were —

COMMISSIONER SCOTT: About half?

MR. ENGLAND: — bearing-wall, yeah.

COMMISSIONER SCOTT: More than half.

MR. ENGLAND: Yeah. The largest percentage that, I believe, of URM's — Ford's Department Store is an example. That has a — maybe 20 percent of that structure is unreinforced masonry and the rest is poured-in-place concrete. So, we have a lot of mixed buildings in the inventory.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: When was this Longs Drug Store over here built that's a couple blocks away?

MR. ENGLAND: I would have to guess in the — in the '60's, mid- or late '60's.

COMMISSIONER PESTOR: Because I was just over there. It looks like a lot of the beams that they're tearing out there are just all dryrot and termites and —

MR. ENGLAND: Yeah.

COMMISSIONER PESTOR: — everything that were supporting the roof.

MR. ENGLAND: Right.

COMMISSIONER PESTOR: Amazing! Amazing!

COMMISSIONER BERNSON: Pre-'71. The codes changed after '71.

COMMISSIONER PESTOR: But these are the beams, though.

MR. ENGLAND: I think this has — we're learning a lot right now from field surveys and running around. This is a learning experience for us.

CHAIRMAN CLUFF: Given, Neil, what has occurred, and in hindsight it's always — it's very useful to look back. What would be on your wish list if you were advising others that they ought to do immediately? Because we know that there are other active faults in the State of California that are ripe to go off, and if you could give advice to another building official, what would you tell them they have to immediately put higher on their priority list?

MR. ENGLAND: A survey of the older homes that do not have sufficient lateral bracing. It's a very simple cure to strengthen these homes and not lose your housing stock. I think that a lot of areas should consider this, and it wouldn't have a large financial impact to a community.

You also find the CALBO and ICBO making a move towards coordinating emergency services within their jurisdictions right now. They discovered their joint calling, and there's a lot more they can offer, so they're in the midst of coming up with a list of bilingual inspectors and different things that we didn't have access to at this point.

So, you'll see some organization there to the building inspection industry. It's now doing a list.

I think the earthquake just opened a lot of people's eyes to the forces of an earthquake, and we'll have to take it a little more seriously than we have in the past.

CHAIRMAN CLUFF: We've heard testimony given in some of our other hearings, and it was referenced here a little bit today, in the decisions that are made by people in your position and others that are in the crisis of an emergency, and decisions have to be made with regard to allowing people to, at their own risk, have access to their buildings or houses or whatever. Are there any lessons to learn out of that, in terms of better understanding how that decision-making process is, and can we improve it?

MR. ENGLAND: Oh, in the yellow- or red-tagged structure?

CHAIRMAN CLUFF: Yellow- or red-tagged. And for example, some people have testified they were kicked out of their buildings where, at their own risk, they would be glad to actually be able to retrieve and save some of their financial holdings and so forth.

MR. ENGLAND: We did not refuse anyone entry into their structures. We entered all red-tagged or yellow-tagged buildings on Main Street at first, did a quick review of the structure, and made a decision at that point whether we would allow them in to retrieve their things. We felt that if we could go in there and make a determination on the condition of the structure, then at that point, we could make a decision whether the owner or leasee would be allowed back in a very limited basis.

At that point, we let them in the structure under close supervision, with a specified time period.

CHAIRMAN CLUFF: How much was that time?

MR. ENGLAND: It would depend on the damage to the structure, on the nature of the task. All situations, we tried to keep the timeframe down to as low as possible, to tried to limit exposure.

CHAIRMAN CLUFF: Five minutes, ten minutes, an hour a day, what?

MR. ENGLAND: Half-hour, eight hours, depending on the complexity. We didn't want any loss of life, so the person that wanted eight hours to retrieve something that was not of value, we would not, but we tried to protect life.

COMMISSIONER KOCKELMAN: Mr. Chairman, do we have a few minutes?

CHAIRMAN CLUFF: Sure. Go ahead, Bill.

COMMISSIONER KOCKELMAN: We drove by the Masonic Lodge building, yellow brick, Flemish blond. On both sides of the corner, it looked — you know, the windows were gone, but the masonry, the mortar looked very good. How did that building fail?

MR. ENGLAND: The rear brick wall on the parking lot side —

COMMISSIONER KOCKELMAN: Collapsed?

MR. ENGLAND: No, it separated from the roof system. And it's leaning out, I would say, 8 to 10 inches at the very top. And unless you would look up at the top and look at the plane of the wall, you wouldn't realize there was damage there. The wall is in one piece, and it's leaning out over the parking lot.

COMMISSIONER KOCKELMAN: Did you or the manager say that that building was condemned and will be removed?

MR. ENGLAND: The owners have signed off the building for demolition.

COMMISSIONER KOCKELMAN: Thank you.

CHAIRMAN CLUFF: Further questions? Tom?

EXECUTIVE DIRECTOR TOBIN: I think Bill has a question.

CHAIRMAN CLUFF: Oh, sorry. Bill?

COMMISSIONER WASTE: What role did the local media play in this? We've heard comments in other jurisdictions that they were — that particularly the local media were of tremendous help in getting information out, and that the national media was probably a darned nuisance. But what was your experience here?

MR. ENGLAND: We had the media as a tool. We had many issues that we needed to get out.

One example is we had people rebuilding fireplaces during the aftershocks, and they would rebuild the fireplace, and it would be knocked down the next day. So, that was an opportunity for us to get a message out, that, you know, "Please wait on some of your reconstruction until — to give us a bit of time." And the news media played a very important role there, on a lot of issues.

Oh, I can't tell you all of them — I wouldn't know. The portion that I observed was a big help to us.

CHAIRMAN CLUFF: Further questions? (No response)

CHAIRMAN CLUFF: Thank you very much, Mr. England, for coming before us.

We have been informed that the next speaker, Chief Smith, is due momentarily. We are slightly ahead of schedule.

Maybe there are people sitting in the audience that have some thoughts or observations, if they'd like to take an opportunity to address the Commission, and share any of their experiences or recommendations. We'd be pleased to let them come before us.

Does anyone want to say anything?

(No response)

CHAIRMAN CLUFF: Well, hearing no — yes — we'll come back to the Commission.

Go ahead, Hal.

COMMISSIONER BERNSON: We have the next speaker. I'll save my remarks till later.

CHAIRMAN CLUFF: Okay.

COMMISSIONER BERNSON: I guess the fire chief —

CHAIRMAN CLUFF: Your timing was perfect, Chief. We're sorry that — and pleased that you can come, and we thank you for, in the emergency that you've been responding to in this difficult time recovering from this earthquake, we're pleased to have you here.

Our goal is to have people like you speak to us, let us know what worked, what didn't work, how we can improve for the next one, how we can work together with various entities such as yourself to be better prepared, to mitigate some of the disastrous facilities that we know exist, and how we can better be prepared, in your role, in the response, and in the — so we can shorten the long-term recovery.

CHIEF SMITH: Okay. Thank you for the opportunity to speak this morning.

Obviously, one of the after-effects of the disaster is traffic. I abandoned my car in Ford's parking lot and decided to walk — I got here faster — or run, so — that's one of the after-effects of some of things we're dealing with at this point, in regards to getting back on our feet, is dealing with the volume of people coming into the city, and doing it around routes that are narrow, to say the least, and difficult to pass through.

To start off with, this City, about five years ago, decided to upgrade our disaster preparedness. The city manager at the time realized that he couldn't find a disaster plan, much less recite it, and wanted to upgrade our plan to beyond the date that it was developed, and that was in the early '60's.

So, we participated with the multi-functional guidance planning that the state and federal governments had developed as criteria, from which we separated out responsibilities for various aspects of disaster control to the various department heads in our City. And from a positive light, I think you've met a number of those department heads this morning, and recognized that all in all, they were quite capably ready to accept responsibility and do the best they could with a circumstance that wasn't good.

When the earthquake itself hit, we'd been preparing ourselves for years on how that might feel. And it wasn't anywhere near how I thought it would be. I knew, from the sound of it and feel of it, that it was one of those that you didn't just start to get ready to get under the table; it was one of those that you definitely got under the table for.

And I was conducting a meeting with the Emergency Housing Coalition — how ironic, at this point — and got everybody under the table. And I remember a couple of sights.

One was that a gentleman in a wheelchair couldn't get under the table, and all he could do was hold a book on his head and pray that the building wasn't going to come down around his ears. And I remember the long efforts that we'd been considering with regards to the handicapped in disasters. And I've got to put to mind what message we're going to deliver to these people that are caught in that circumstance for the future. Can they be — roll themselves into a doorway, or be prepared to do things that the rest of us, from the standpoint of our own protection, can do and they can't do? How do they deal with that?

Secondly, I was very happy that the fire station itself had been earthquake-proofed as a part of the early disaster preparedness. Water heaters were all strapped down, oxygen bottles were strapped down, things — bookshelves, computers, and things like that were held down in place with some preparations the guys had done prior to the earthquake. And so, our facility — one door stuck, and that's — in our Station 1, that was the only thing that we really had go wrong with our building itself.

Some power lines — some telephone lines dropped, and the guys were able to pull them out of the way without hazard. They got the equipment out, and then it was ready to go to work.

Everybody was in that state of shock which you tend to get in when a disaster occurs. It's like an eerie feeling, like "Now what do we do?" And instincts took over. We looked across the city — or I looked across the city, and I could see the dust rising from Main Street and the columns of smoke beginning to develop throughout the city.

And in our disaster plan, we had set priorities for response. Our first priority is to respond to the most life-threatening fire and deal with the fire situations first; secondly, hazardous materials, because, in our minds, there's only one department that really can handle those two things, with the tools and equipment and the personnel that we have, and if they aren't handled, they lead to much worse situations, left untouched.

Rescue and medical emergencies — medical emergencies and rescue actually are our third and fourth priorities, medical emergencies because they can be life-threatening and obviously need attention, but there's a lot of medical people available to deal with that, once they get their heads about themselves.

And in this case, Salud Para La Gente, in the downtown area, set up a field clinic on their own, in our plaza, and treated a great deal — a number of the victims that were — injuries during the earthquake.

I only wish we had had coordinated that prior to the disaster so we would have had a better handle on the capabilities our community had in dealing with those kinds of issues.

There was a tremendous pull on the part of the emergency responders to want to stop and help these people. I mean, they were — the engines were being — people were trying to stop them because there were injured people in the streets, and this was their only sign of help, but they had to keep the priority in mind, in that the fires were still going. And some of our younger firefighters had a real difficult time dealing with that, as they watched people watching the engine go by, without them being able to stop and help.

Once they got to the fires, obviously, it seems like we should have prepared for this, and maybe subconsciously, we had, but physically we hadn't, in that once we got on the scene of the fires, our water system was gone. And the worst areas where you're going to have the majority of fires is also where your worst enemy is from an earthquake, it's going to have the water system. And you've got to compile all those worst-case situations into an agenda that we can plan around for the future.

The meeting I just finished was with the officers, and we identified some of the frustrations they went through.

I think fate was watching when this earthquake occurred, because I've never seen this in my life, where fifteen minutes prior to the earthquake, a water tanker pulled in the back yard of the fire station, because one of our firefighters' well had gone out prior to the earthquake, and he told him just to use the hydrant in back of the station to fill up so he could bring him water. And the tanker was full of water, 5,000 gallons of water that he had, and he was sitting in our parking lot when the earthquake occurred.

The captain of the first fire in the downtown area — and you have to visualize gas main leaks going up into the air, houses sitting on tops of their meters, severed gas lines, natural gas was going all over the place, and a fire in the middle of this. And the nozzle that had run dry, because we'd had about 100 to 150 gallons a minute of water coming at a supply, where we needed 500 to 600 gallons a minute of water. He knew the priority was just to stop the fire, not put it out, and he couldn't do it.

And that tanker, because of our secretary telling him — you know, he came into the station, "What do you want me to do?" She sent him to the fire. He got there just in time give enough supply to stop that one particular fire. If we would have lost that fire and it went to the next buildings, I don't know where we would have stopped it, especially with the gas leaks.

So, consider the worst of the worst and plan for it, and, you know, the urban type firefighting unit, we don't have watertenders.

Our dispatch priority was — from the standpoint of my function, was to get the guys going, get them started, and then get the emergency operations center open, which is above the police department in City Hall. And we didn't plan for the fact that the earthquake was going to knock the generator out, that it was going to keep us from having our communications, it was going to keep us from paging our people out, it would keep us from receiving calls from county communications, it was going to keep us from actually getting in and coordinating the emergency response with a team of people.

When I saw the only dispatcher that we had, she had two portables, one in one hand and one in the other. That was our communications center.

And we had people who realized, as they came to City Hall, the police department, that somebody was going to be here to answer the needs, and there was a tremendous amount of concern about the collapsed buildings, the gas leaks, and a number of people that were really pressuring me specifically to send a unit to the overpass that collapsed on the freeway.

I can't say enough that anybody in charge of an incident has to stay by the priority, and we didn't dispatch a unit out there, and fortunately, we didn't, because it would have been a waste of time and a jeopardy from the three fires that we had burning at the time. You have to stay with the priorities, and fortunately, we did. It later turned out that our help would not have been any benefit at all in the collapsed overpass.

One of the things that worked is that PG&E was in early, and they came to our command center. And we had people roving the gas leaks, two firefighters roving the gas leaks in a pickup, and they were able to set some priority on what — where the problems really were. The ones that they were able to shut off themselves weren't an issue at all. Those that were leaking from a house was one issue; those that were leaking at the street were the biggest issue. And we were able to patrol those main leaks in the streets in the quickest possible time in getting PG&E support.

We gave them a radio, and then coordinated that with our fire people, and that operation ran real well when we got it together.

We finally got our generator going. We opened up our communications center, and then continued to prioritize calls. And then, all of a sudden, we kind of tapered off on the volume. And, in fact, this whole disaster has been like waves coming through, where it peaks and it's an enormous amount of tension and an enormous a volume of requests, and an enormous a volume of demand on services, and then, all of a sudden, it tapers off and you get a quiet spell. And you're able to get your head — and just about the time you're able to get your head, it starts coming again. It just seems like it's been that kind of a ride, a roller-coaster.

One of the things I've learned from this exercise that I would love to pass on — I'm going to pass on to everybody — is we've been conditioned to believe that we're on our own for 24 to 48 hours, that it's your — you know, you've gone through the earthquake and lost touch with the rest of the country, and you can only imagine that you're —what you're up against is what every other city in Northern California is facing. And that simply was not true.

Monterey County was back on their feet very quickly, and had support for us, but we didn't call on them. We didn't call on them because we didn't think, number one, that they would — we would get it, and number two, we hit that lull in the time when we weren't even sure how much support we needed. We weren't sure yet how much damage had occurred to the city, and we weren't sure about what was going to happen next.

It wasn't until the second evening when the power started to be restored, and the aftershocks started hitting real hard, that I called for a strike team, a fire strike team, to come in for support, and got it immediately. And they helped us through the second night and the following two weeks, tremendously well. And I only wish that I would have called that strike team right away, because it was available.

And it's a lesson I've learned that I'm certainly going to try to pass along to everybody, is don't believe that you're in it by yourself from the first minute on, because it's not true. I got calls from all of my friends in Northern California, and some in Southern California, that had people standing by at their stations, ready to roll, if we were to utilize the system and have them come in.

Also, the need to coordinate and communicate — the system that's set up will work if we use it. And we have to have that line of communications that's simple and clear: the cities go to the county, and the county goes to the region, and the region goes to the state, and the state goes to the federal, and the — that's what we stand by, because we saw a number of occasions when that was circumvented, by a lot of different people, it only served to screw up our operations.

I can give you one example, and there's many more that could follow, but one thing that occurred was that many of our people in this community survived the Mexico earthquake, and they know exactly what it feels like, and what the aftershocks are going to be, and what the dangers are involved with being in buildings. And there was no way they were going to go back in a building in the first week, two weeks, even three weeks, with the aftershocks that were occurring.

And so, we tried to set up an outside shelter with tents, using National Guard support. So were many politicians, so were many social groups, so were many other people who were trying to do good by the exercise. They had the system so screwed up and so tied up in knots, on how many tents, where the tents were going, who was going to call for the tents, who were going to pay for the tents, that it took one man all night to square it away and put it back on track on the system. We lost an entire day because of that particular incident.

Meanwhile, people were finding tents. In fact, we put up personal tents, ourselves, right across the street. I had firefighters and police officers putting up camping tents because it was going to rain, and we had no shelter for these people who were not going into buildings.

It was kind of a heartwarming experience, on the lighter side, to see police officers with flashlights and tent poles and firefighters and everybody trying to get their tents up, and people, after they got the tents up, coming in with their babies in blankets and such, and finally getting something over their heads besides the stars or their car or wherever else they were living.

But it was damn frustrating, from the standpoint of the system not being able to react and adapt to our demands, that Red Cross locally had never heard of a tent shelter and tended to go for what they knew best, and that was hard buildings for shelters. And that doesn't work in an earthquake.

Coordination amongst people who want to do right and help was also a difficult situation to deal with. We had our emergency operations team — and like I said earlier, the department heads rallied and developed a plan and assumed responsibilities. Our finance director took over resources and went with it. Our city clerk took over public information and went with it. Our recreation director took over shelter management and did a tremendous. I mean, our department heads were very much involved with dealing with the disaster.

And then, in comes help. And some of the help had been training very well in the system, but had no touch with reality as far as what problems really can be, and absolutely no touch with what Watsonville's problems would be, because each community has got to deal with their disasters in different ways with regards to the people concerns that they have. And the specifics that happened to our city, only we knew.

And while they were trying to do good, they were leading us by putting their hand around our shoulder and taking us this direction, when, in reality, that wasn't the direction we wanted to go, nor should have gone. They wanted to rewallpaper our EOC. They wanted to do so many things to be helpful, but actually were a hindrance, so we had to kind of put a stop to it and put it in perspective, and asked them to live with us for a while and transition into our operation, rather than feel like they have the answers and want to put it into our system.

I think that you're going to see that. And any operation that needs that kind of support, that transition element is important. Either you keep them out, or you use them by transitioning them into your team and letting it go from there, because, actually, for a while, they were more of a hindrance than a help.

The only people I could really count on were my friends that came over, willing to live with us and walk in our shoes and support that, over the people who were willing to come in and tell us how to run our operation. And I don't mean to sound like I'm overly protective of our operation, because we could — we'd listen to anything that anybody had constructive to say, and would run with it. But it wasn't like they were even giving us the opportunity to tell us what they wanted to do so we could hear it. It was like they were doing it anyhow, and that's wrong.

And I would highly advise that that be added into the training system. How do you transition into an operation?

Have you talked to Pat Donahue yet, our recreation leader? She's given you a good rundown on the shelters and Callaghan Park and some of the things we're up against?

And you've talked to Neil England about damage assessment and damage control and our yellow-tag policy.

CHAIRMAN CLUFF: It's okay if you want to enhance or add to — we've got time.

CHIEF SMITH: Okay.

CHAIRMAN CLUFF: You're a valuable resource. If you have time to spend a few more moments with us, we'd appreciate your views.

CHIEF SMITH: Okay. Well, the emergencies in this disaster starting off as real emergencies, and then it seemed like there was a different priority day by day.

But one of the first priorities I remember is dealing with a massive amount of resources that came into this community. We estimated that we received 500 tons of things in the first week of the disaster. And unfortunately, 80 percent of those things were clothes, and that wasn't what we needed. In fact, that caused us a real problem, in that we had to warehouse, sort, and distribute and go through a lot of things that cost us more time and caused a management problem.

CHAIRMAN CLUFF: What did you need?

CHIEF SMITH: We were up against, first of all, from a standpoint of food, medical supplies, baby clothing — we had a variety of concerns — blankets, sleeping bags — I could go through a list of those items, if we needed. And we will have that up and ready to review in the future, because that's one of the things in our debriefing and our review that we're going to come up with, is the kinds of things you most need after a disaster of that sort.

In no way, shape, or form did we need the volume of things that came into the community. On the other hand, how could you blame or show any kind of disfeeling for people who were willing to give so much of themselves? It was tremendous. People were coming from all over the country, bringing in things, and you couldn't help but feel obligated to take them and use them. And it added to the stress of the situation because — and we weren't going to turn them around and say, you know, "Get out of here" — we were going to take them and warehouse them and sort them and get them to the people.

That process ended up in a story of its own, in that the city could not — our staff could not adequately distribute them without having repeaters coming in out of one side. And our assistant city manager, finance director, met with the churches, with social groups, with as many people as he could get to distribute, to get them to the people who really needed them the most. And that worked. Once he got up and going and he got these groups coming to meet with him, and he had meetings with them regularly, he was then ablt to sort and warehouse and then supply them with the needs that they had requested, rather than to be a distribution center ourselves. That worked real well.

The next emergency that we came up against after resources was getting adequate shelter to the people who were living in the parks. And Callaghan Park had set itself. Once the supply tent went up and once the people got leadership, and once the people got attention at that particular park, there was no way that we were going to move them to better ground, from the standpoint of their health and safety, because they were still convinced that that's a better spot for them. They got a lot of media attention. They got a lot of financial support from outside groups, a lot of food.

But on the other hand, they're living on a tightrope, because I've seen the barbeque pits that are turned upside down next to their tents. And I've seen the people who came in there with food, you know, that had already been cooked for us, so they said, "Well, just put it aside." And it was like macaroni and cheese, and you know what cheese does when it sits overnight without being refrigerated, people eating that and the problems that we're up against.

We had a nurse who volunteered her time who survived the Mexican earthquake and realized, you know, what kinds of problems spin off with not having the right atmosphere in the shelter, and she was astounded at the conditions.

These weren't visible to the people who would immediately walk in there. You couldn't see this the first day you were there. All you could see is people who needed help. But overall, that shelter continues to be a very continuous situation, and that we're doing our darnedest to maintain health and safety, but not condone the fact that it should exist, because it's not right. And knowing how to prevent that from occurring would come through planning.

Our next emergencies came with the demolition of the buildings that were dangerous. We didn't have any buildings in the downtown area that were so critically damaged that they were ready to fall at any moment. On the other hand, they could have definitely fell with a good, heavy aftershock. People still have belongings inside that were saveable.

People still have questions in their mind that some of the buildings that were red-tagged could be saved. Architects were coming into our community telling them that they could be saved. They were getting a lot of mixed messages from different groups, on, "Yeah, don't let them demolish this one; we can save it for you for $40,000 or $50,000." And then, the next minute, that was found not to be — "Well, for $40,000 or $50,000, we can stabilize it, so we can really get into these buildings for $200,000 or $300,000 and put them right for you." What's "right"? "Well, they'll withstand a 5.0 or maybe a 6.0" And then, you know, the owners had to make a conscious decision. And most of them now are deciding that those that have been that significantly damaged, those buildings have to come down.

But we had to live through Main Street being closed off, traffic nightmares, frustrated owners, frustrated staff, because we all wanted to try to get back on our feet and get back to normal as soon as possible. And the messages were going in all different directions.

And I also have to say that from the standpoint of FEMA, while they had a tremendous amount of support for us, there were in no way ready to deal with bilingual, or no way ready to deal with consistent communication. And while I have a lot of admiration for the fact that some retired people from FEMA came back to work in this disaster, they're not familiar with the current laws that are in place today, with what is refundable and what isn't refundable, and were giving mixed messages.

And when we're trying to get the trust of people, it was darned hard on us to tell them one minue that, yeah, they're covered, and then next minute they're not. Or it's darn hard to find — we already had a housing problem, with three or four families living in one house, but only one was going to get money. The others weren't. That created a real problem that later was rectified that that wasn't true. But when we're trying to get trust and we're trying to get — build our — get ourselves back on our feet, those mixed messages were tough to deal with.

I think we all understand how they came about, and we're not — you know, we're not trying to put fingers on people, but at the same time, we're trying to pass them on because that was very frustrating.

CHAIRMAN CLUFF: That's exactly what we want: what can we do better? Keep going. You're doing a wonderful job.

CHIEF SMITH: Okay. Now, we went through and inspected every — with the help of the state fire marshal, with the help of CALBO, with ICBO — I mean, help came in. Just organizing them and getting into a productive mode was a challenge for our staff, because you have to — you know, in smaller cities, our department heads are used to working with, some of them, only three or four people on their entire staff. The next thing you know, the building official's got 30 or 40 inspectors. He's trying to organize them and be an active participant in the EOC and cover all the bases. And it was tough — tough to do that.

The state fire marshal and few of the other groups really responded well, in that they understand the incident command system. So, "Give me a mission, make your mission clear, and then let me alone and I'll do it for you." And we found that that worked real well, although, when we threw something at them that wasn't in their mission, they went to pieces on us as well, not that — you know, I don't want to point fingers, but at the same time, in the systems, flexibility is important, and adaptability is important. And with the incident command system, it's not as flexible as I'd like to see it be, in that — you know, things that weren't directly in the mission or left off.

Dealing with the National Guard was especially tough sometimes in that regard, in that every thing I wanted them to do, I had to make a request and get an actual mission, mission number, which so many times is the same number that they were down here for. And it didn't seem like the person in charge of the facilities locally, National Guard-wise, had enough authority on his own to make decisions. We always had to go up through Sacramento and back down, and that became very frustrating and very time-consuming, and I'd like to see that looked at specifically.

After the buildings were inspected, then we had people that, number one, wouldn't leave, and, number two, wouldn't go back in. Some wouldn't go back in green-tagged buildings, because they were sure that the buildings were unsafe. We're still dealing with that problem, and now we're developing what we're calling a yellow-tag policy, where we put together outreach people who go to the shelters and go the community and find those people that are not in their homes, and find out why. And if the reason for it is a yellow-tagged home, then they have to get that to the code enforcement people, and the resources that we have available, like housing for — Humanity for Housing, and CCC, and the labor groups, and all the different groups that have volunteered to help us rebuild, you know, minor problems to put people back in their houses — being able to coordinate, where we get all of these groups working together in a processed fashion, get through and get these people back in the yellow-tagged homes, is difficult.

The yellow-tagged home itself is kind of problem itself. You could be yellow-tagged for a badly cracked chimney, or you could be yellow-tagged for utilities being badly damaged, and there's a wide disparity between the danger levels of both of those things.

And then, the tags themselves being bilingual — a lot of frustration on the part of people in understanding what the tagging means in the first place.

Right now, we're in the midst of trying to develop that process and hire people on, because our — while we had 30 or 40 inspectors, now we're back to three. A building official is still running his tail off, one inspector in the field, and one inspector at the counter just to problems — we're nowhere near ready for that level. We're trying to hire people now, and I think that in planning wisely, it would be a good idea to have those people's names and numbers and be ready to hire people, or expect to transition, at least, from the 30 or 40 to 10, rather than back to three.

One of the problems that we had overall, I think, is everybody's tendency to want to leave. The National Guard, for example, is the last one in and the first one out. And while I can understand why they want to get back and ready, I believe it sometimes leaves the system kind of weak to pick up the pieces. And some of that is our fault, in that we were pressured — "Okay, when? Give me a date when we can leave. Give me a date when we can leave. Give me a date when we can leave." "Okay. You can leave — let's try around the 17th, 18th." They're gone on the 17th.

I know now that I'll say the 17th, 18th of December, rather than November —

(Laughter)

CHIEF SMITH: — because that's all — once you've — once you've told them, then plan on them being gone. And they did offer great support, in helping in the kitchens, for Red Cross, and helping in keeping the shelters up, and helping put flooring down. We had rainstorms that created mud, created problems for the people, and we had to kind of improvise, and we did. We had a lot of demands that — like I said, up and down — one minute they were — just didn't have anything to do and they were — and this next minute, we had too much for them to do, and we couldn't get any more help out of them. So, that's just a disaster. Some of this, we just have to live with it. That was something that I think we learned from.

Politics — we definitely have to have them, but, boy, they sure can be frustrating sometimes, about the fighting back and forth about what we will do or what we won't do, and how it all comes back in play, as far as a focused plan of action. And the administration had to separate themselves from it.

In fact, I haven't read, personally, a newspaper article through, since the first of this earthquake. I refuse to, because it would do nothing more than frustrate me, from the accusations, and the innuendoes, and the half-truths, and all the other particulars that come through in talking to people who don't know what's going on, what the plan really is.

And I have to really feel for the entire EOC staff, because some of them did read those articles and took them to heart, and it just complicated and frustrated them, from the standpoint of them knowing they did their darnedest — they did 150 percent nonstop — and then were looked upon like they were looked upon. They didn't feel good.

And I would suggest that newspapers be outlawed from EOC staff people for the first three weeks of an exercise like this —

(Laughter)

CHIEF SMITH: — because it just frustrates us.

But I have to say — I don't know if you've talked to Laurie Washington, our public information officer. She did a tremendous job, from the first minute, on getting emergency signals out to people about what to do and not to do, right on through to dealing with the press and setting up appointments for us to come and talk, and then letting us get back. She was — she handled them excellently. And that's a critical position in every disaster you have.

I guess that's it.

CHAIRMAN CLUFF: Let me get into some questions, if you'd be willing to answer.

CHIEF SMITH: Okay.

CHAIRMAN CLUFF: Chief Smith, I'd just like to say that this community is extremely fortunate to have a man of your caliber and competence in the position that you're in. Your ability to understand the problem, to very lucidly and articulately tell us, is extremely valuable to this Commission. Your testimony will be extremely valuable to us.

So, there are —

CHIEF SMITH: Thank you.

CHAIRMAN CLUFF: — some questions that we'll have. I want to start off with a couple.

You mentioned earlier about lack of water, and gas leaks, and the combination of those in some areas really had the potential of being much worse than it was. Can you give us a little more detail in terms of why was there a lack of water? Were the water mains severed by ground failure or buildings collapsing? And why were there gas leaks? Were they common, or — what was the problem?

CHIEF SMITH: Well, in a way, while we did consciously plan for this, we knew that there was a potential for it, because the area that was impacted the most was the area of some liquefaction in our city. All this downtown area was a natural swampy area in its beginning, and it's been targeted in our disaster plan and in our general plan as a liquefaction area.

And there was a lot of movement, and a lot of water mains severed, you know. There was one big one up on East Lake, and another one on the other side of town.

The Water Department actually spent the first few days tracking water leaks down so they could start sectioning it off and then bringing control back to the water system. They worked night and day to try to find them, and then repair them. And when they found the main breaks, that's when our system starting come back up again. But finding them was difficult.

One was on a bridge that went across our — the Corralitos Creek there, on East Lake. And we didn't know it until they found it.

So, it was natural that it was going to occur, except I guess it was just like we were talking about this morning in the officers meeting — we didn't know — didn't plan on it occurring, although we knew it would occur. And it really messed us up, as far as — it could have been worse.

And thank God for that water tanker! I can't believe that happened. But if it hadn't have been for that — we used that tanker on two fires, that — both times, he showed up with it.

COMMISSIONER BERNSON: Someone was upstairs.

CHIEF SMITH: Yeah. Someone was helping us along.

CHAIRMAN CLUFF: The experience you had here was like the Marina District in San Francisco.

CHIEF SMITH: Yeah.

CHAIRMAN CLUFF: It sounds like the situation was almost identical. Thank God for miracles.

CHIEF SMITH: Yeah.

CHAIRMAN CLUFF: Other questions? Hal?

COMMISSIONER BERNSON: I just want to say I think that the report was excellent. I think you gave us a lot of really good information for consideration. It seems to me, if I may — I started to make some comments before — the emergency response seems to have been right on target, even though you may not have practiced or drilled in some of the things that you would have liked to had back to do over again, or had preparation.

I think it also shows the things that there was preparation made for worked, like making sure your fire station was protected, your equipment was tied down, and things of that nature, so that they were operable, so that you could deal with the emergency at hand.

What I really see as a major problem is some of the things that — I don't know whether it's the state's fault or whether it's local government's fault, but some of the things that have been set forth have not been followed up on. Maybe the state hasn't acted strongly enough to force local governments to comply with retrofit on the buildings. Maybe us as a Commission, maybe we haven't been outspoken enough.

Certainly, the attitude of local governments has been not to do anything unless they're forced to do it. I don't see anything happening in the way of planning. I asked some of your officials what's happening with planning for recovery, and I understand that you have a terrible liquefaction problem downtown. I don't see any plans. Are they going to rebuild the same types of — you know, buildings in the same area? What are they going to do?

And we keep making the same mistakes.

Pat, I don't know if you remember this or not — but we were in Shantung, on a trip to China, and there was a city that was completely destroyed by an earthquake — I mean, every building leveled and a quarter of a million people killed — and we saw construction going on, where they were — they were using steel and everything, but the footings weren't deep enough and everything else, so we asked them, we said, "Well, what are you doing as far as education and preparation?" They said, "Well, we've had our earthquake." Okay. "We've had our earthquake."

This was coming from officials, which means that they didn't think it could happen again. That's the attitude that people have, "It's not going to happen here."

So, I think the emergency response, I think the professional people and response, have done a good job in the areas that I've seen, because that's their professional responsibility, and they did it. Where we have failed as a state and as local government is in making proper preparation to mitigate and prevent the damage that occurs in what we've known has happened, because it's happened in communities throughout the history of the state, from San Francisco, Coalinga, El Centro, Long Beach.

We know that the URM's are going to collapse, and yet we haven't done anything that has required the strengthening of these buildings so that we were ready for this disaster. And this is not the last one. They're going to continue to occur.

So, I think that we need to — I think the state does need to adopt a standard, number one, for saving some of these buildings. They can't all be destroyed, as perhaps your city manager thought they ought to be, because, in many communities, hundreds of thousands of people will be displaced, residential buildings and so forth. There's no replacement for it.

So, there has to be standards, and the state does have to act to establish those standards and require something closer than five years from now to start to work on them. I think that ought to be a key message that we need to bring back.

Just — those are just my comments, Mr. Chairman.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: Chief Smith, some communities have equipment where they can take the suction from a lake or a pond or a swimming pool or a bay. Do you have such sources of water and do you have such equipment?

CHIEF SMITH: Well, all of our pumpers are equipped to take suction from any water supply. You know, we don't have many swimming pools in Watsonville —

COMMISSIONER KOCKELMAN: No.

CHIEF SMITH: — like they may have in the Valley, or in some of the other areas. But we do have city water that's used in construction, and made a call for that as soon as we could get it, but it wasn't like we had immediate access to it.

COMMISSIONER KOCKELMAN: That doesn't seem like a lot of water to me, a tanker truck.

CHIEF SMITH: No. But it was enough in this case to stop the residential fire.

If this would have been a Main Street, we'd have to take a whole different tactic. And we have an evacuation plan, from the standpoint of moving people out, and dealing with it, with the emergency, on a much different basis, that would have had to have been put into place. And I can't tell you how it might have turned out, other than, you know, that wasn't the case.

One thing I'd like to make a suggestion on, with regards to policies from the state, when the city manager decided to use redevelopment funds to start redevelopment downtown, the 200 block was still standing. And he personally, as well as the city council, took a lot of pressure, politically and otherwise, about taking that block down.

But I can guarantee you that we would have had more deaths and more injuries, and a heck of a lot more problems, if that block would have still been standing, because it was twice again as bad as the blocks that we did lose the overheads for.

And, secondly, I can't say enough about how important it is to jump into doorways rather than out into the street when these — when an earthquake hits. And if you saw the buildings, the parapets and the overhangs, drop onto the sidewalk, and those people that jumped into the doorway were uninjured. Those that tried to run into the street got hit. And that's where we lost a person.

CHAIRMAN CLUFF: Chief Smith, you mentioned the distribution of emergency supplies and goods. You learned what I think we've learned in almost every other earthquake: you get a lot of things that you don't need or want. And like you said, you hate to refuse some of these things.

The Executive Director and I were in Armenia shortly after that, and that was the message there. They got too many things they didn't need. And we've observed that in a lot of other earthquakes as well. Perhaps there's some policy about a staging area where the people immediately affected don't have to inventory and catalogue, and they wait until you or others say, "Here's what we need," and then the materials are dispersed, because, in some places, clothing and bedding and so forth was what they needed; they didn't need food. Here you needed food. And so, perhaps we can learn from this and do it better next time.

CHIEF SMITH: Well, you know, one of the things they have to — the people supplying resources, I've heard over and over again, ad vomitus, they were in no way going to tie into Red Cross, governmental operation, or anybody that was going to see after their resources; they were going to deliver them personally. And, I mean, these people were going to deliver them personally, because they were convinced that they were to be warehoused out or lost.

And they all came personally, and they — and there was times when they just stopped in the street and they were just mobbed by people, and people went through things and took what they wanted. And there so many times that they just dropped it at the plaza, and then we had, you know, a clean-up problem involved.

There's got to be some answers to that. But I don't know that there's an easy one. It's something I think we ought to focus on and try to deal with, because we want to give people trust that their resources are being properly used, and an organization when they come to town, because they — they can really clog things up, literally.

CHAIRMAN CLUFF: Yes, I — it reminded me of an experience in Guatemala, where — and I'm sure these people have in mind, and they're well-intentioned in bringing this personally, but a colonel in the Guatemalan army who was responsible for warehousing and distributing was selling the materials out. And when he caught him doing that, the general shot him right between the eyes, on the spot.

CHIEF SMITH: That's it.

CHAIRMAN CLUFF: And that stopped that.

(Laughter)

CHAIRMAN CLUFF: But, you know, it's very difficult, because people are well-meaning, and we don't want people to try to take advantage of the system.

A question over here, Randy?

COMMISSIONER BERNSON: He must have been a pretty good marksman too.

COMMISSIONER PESTOR: Just one comment on state policy and on this area of unreinforced buildings and other unsafe buildings. And I think we need to go back again when Senator Alquist first started with the SB 547 program, and it was vetoed by the governor; it was successful a year later. We gave local governments guidance in the SB 547 procedures to develop — identify the unsafe buildings, notify the owners, come up with a program.

Now, Watsonville hasn't come up with a mitigation program, right?

CHIEF SMITH: Right.

COMMISSIONER PESTOR: And the city manager tells us, "The state didn't tell us what we had to do." Well, we gave them the framework to do it, and I think there is a certain responsibility on cities and counties to follow that guidance and implement it, rather than blaming the state at this point, because there's a lot of guidance in the law, and I think they need to look at themselves and what they've been doing and haven't been doing.

There's law relating to safety elements in general plans. When was the last time Watsonville revised its safety element to take into account some of these issues?

So, again, we have to go back and consider, you know, how difficult it was for Senator Alquist to get SB 547 through — I think the governor vetoed it the year before. And this is as strong as we could get, and local governments still aren't complying.

And we know how it is when the state says, "You've got to do this and you've got to do that" — they yell at us. "You already tell us enough to do." So, we give them the guidance and they don't do it, and then they blame us for that too.

So, I mean, it's just — I mean, there is some responsibility on the part of Watsonville to kind of follow the law and the guidance in that law. Now, I know you've done everything you can do too, but, again, I think that there's — you know, Watsonville needs to get its act together too.

CHIEF SMITH: Well, I'd like to respond to that. While, on one hand, I understand and agree with your frustration that the law exists and the message is clear on what we're to do, but I don't think it's quite fair to single Watsonville out specifically —

COMMISSIONER PESTOR: Oh, no. I'm not —

COMMISSIONER BERNSON: He's not. He's was just being —

CHIEF SMITH: No. I'm not — I'm just saying —

COMMISSIONER PESTOR: — singling out Watsonville.

CHIEF SMITH: I'm saying as an example, because outside of some of the other mandates we're working under from the state, in hazardous materials alone, and the redevelopment issues that we're facing, and the housing problem this community had is nowhere near the other communities I've worked in.

This is my third fire department. I started in the City of Davis, and I worked for the City of Manteca, and I'm now the fire chief of this community.

And I see much different problems, deep-seated problems, housingwise, in this county than any of the other areas I've ever been involved with, in that this county has got a very strong no-growth concept, and a very tough problem to deal with. Like I said, during the disaster, I was conducting a meeting on emergency housing — that's how bad it's gotten around here, with regards to trying to get a coalition of support together to deal with the people living in the garages and the chicken pens and some of the other places that people live in.

So, from the standpoint of problems that this community was dealing with, that this city council had been dealing with, and what our staff has been dealing with, I'm sorry to say we weren't able to come up with that plan on earthquake safety for the buildings. Although it was in our priorities, and it was something we were going to contract out for, we weren't given the financial support from the state to pull this off.

And some communities need that, and this was one of them. I think we have to look at individual community concerns and abilities before we point fingers back and forth anyway, and that's what we've been up against.

So, it's not because we've ignored it consciously; it's just that other priorities have really been —

COMMISSIONER BERNSON: That's part of the problem, is that the communities always find other priorities, and this has to be one of those priorities, as everybody found out.

CHAIRMAN CLUFF: Yes. We're not here to point fingers. Our process here is to understand, and there are different views and people who may appear to be pointing a finger. We're trying to learn so that you and others can do it better next time, because we know there will be a next time and a next time and a next time.

CHIEF SMITH: I understand. I understand, and I agree with the statements.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: I have a quick question.

You said you had three fires after the earthquake?

CHIEF SMITH: We had 15 calls in a matter of 12 — 15 fire calls in a —

EXECUTIVE DIRECTOR TOBIN: Could you just tell us what — summarize those calls, how many were fires and what the causes were?

CHIEF SMITH: Well, we had about 175 total calls, but there were 15 of them that were fires. And two of them were mobile homes, fully involved, and one was a residential structure.

Mobile home parks were hit very hard. And, in fact, when we started restoring power on the second night, we had two more fires, and both of them were mobile homes. So, I think that overall, that was — that stood out, more so than the residential structure.

Why some of them didn't burn, I'll never know. I mean, buildings had just lifted off their buildings and sat on their gas meters and collapsed the gas meter and severed it. Why those didn't ignite, again, help from above, because — I don't know — it's a miracle.

COMMISSIONER BERNSON: What about automatic shutoff valves? Would that have assisted, or would that have been a factor here, if they had — particularly residential use of the shutoff valves?

CHIEF SMITH: Yeah, although — you know, the ones that were the toughest — people were really doing well shutting off their gas. I think that they realized gas and electric were priorities. The ones that were tough were the ones that the buildings landed on the gas meters and severed them below the meter, below the shutoff.

COMMISSIONER BERNSON: So, there was no way to shut those off, huh? Yeah.

CHIEF SMITH: Only from the street, and dig and control them from there.

And then, secondly, one of my fears about the automatic gas shutoffs is the smaller shakes shut them off, and then reigniting them is — sometimes those lead to bigger problems. So, I don't know how I really stand on the automatic shutoffs.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Chief, you're to be commended for your department's very fine response to this disaster, and your own obvious professionalism.

Do you have volunteers from the community offering to assist you with your tasks? That's one of my questions.

First of all, how many staff did you have on duty at the time of the disaster, in the department, within the fire department?

CHIEF SMITH: I had eight people on duty.

COMMISSIONER SNYDER: Eight.

CHIEF SMITH: Uh-huh.

COMMISSIONER SNYDER: To manage a disaster of this size, that's extraordinary.

Then I'm sure you had community volunteers coming in, offering to assist. How did you mobilize or manage those volunteers effectively?

CHIEF SMITH: On emergencies, we just took their help. And one guy was by himself on a truck and was being dispatched to a medical emergency, and somebody offered to help, and he took them. He just took it upon himself to take the guy with him. There were people that were left with hose lines in their hands, once we knocked the fire down — with hose lines in their hands to kind of hold — check the fire, and then we took our engine off to the next call.

There was people that — there was tremendous support. People have a tendency — the looting problem and the crime problem, as you well know, doesn't exist. And we had — we caught two looters, the police department caught two looters.

And quite frankly, your solution sounded good for those people.

(Laughter)

CHIEF SMITH: But that was it. But the people — like this one lady who was an invalid in her home, a guy crashed the door open, got her out of her house, got her safe, and then was gone, never — you know, not wanting any appreciation for it or anything. They just did it.

They went around shutting gas lines off, and they went around doing things on their own. And then, volunteers through our system helped.

We put a person in charge of personnel — volunteers, by the way — in that we were trying to get organized, themselves, the first days of the disaster, on what is it that we needed to do. I mean, we just didn't have a good handle on what the actual problems were, so we couldn't really put the people to use the first couple of days, effectively.

But we captured their names, and their expertise, and how we could get in touch with them, and then tried to call them after the disaster. And we're as successful as I would have liked on getting people, you know, on weekends, because a lot of them had gone back to their normal routines and deep into their own emergencies, and more in the same frame of mind. And then, again, groups of people were coming in right and left, so we had those.

CCC is — I have to add a plug for them — a tremendous group. I have a lot more respect for them than I ever had before. It's not that I didn't have respect for them before; it's I just didn't know they existed to the level they do. Those people are very professional. They have a supervisor of every crew, and their capability is to be flexible and to do what you've asked them, without having to get mission numbers and things. And you just give them a general idea before they come what they'll be expected to do, and they're ready to go to work.

And we're still using them. That was a great force. That's a big plus in our operation that I know now that I didn't know before.

Ham radio operators were very valuable. And again, they weren't tied to the streams. All they wanted is to be used, and used effectively. And once you did that, they were great.

So, there was — some very good people that volunteered.

COMMISSIONER SNYDER: I had one other question.

You mentioned a couple of things with regard to personal safety, ducking in doorways, and you yourself and others getting under the table. Any other lessons learned that you could just tell us briefly, about things people should have done or shouldn't have done?

CHIEF SMITH: One of the things that we put out in our training was — we had a deal this year, "Surviving the Big One" — again, I guess, maybe fate this — we picked public education, and we talked to about 3,000 or 4,000 people. And one of the things we always mention to them is to take the shock, the earthquake, seriously. And I had given up on trying to convince them to get under the table for every time they felt an earthquake coming, because that's not realistic.

But I told them, "At least be ready. At least pull your chair away," you know, and at least get them to think that.

And I think that, if anything, I could convince people to continue to do that, to take cover and survive the Big One — I don't — I tried to get the firefighters to do that, and they did it. I didn't want them to think about moving fire engines or doing anything except surviving, taking cover and surviving the quake. And then, after a few minutes have gone by and you collect your thoughts, go to work on dealing with whatever it is you have to go to work on.

But if we can keep that message out there, to at least be ready, when the Big One occurs, to have — you know, that's the first thing that jumped in my mind — there was no doubt — "Tell everybody just to get under the tables," and they were — it was done, just like that, and we were ready.

A couple people got up and made a run for the door, and I wish they hadn't done that. But they did that, and — but they survived. But that's, you know, when you get caught with flying glass and falling objects.

But, overall, they didn't.

COMMISSIONER SNYDER: Thank you.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Chief, thank you for your report. I think it's got some really good information.

One thing you did say that concerns me a little bit is that the message that you want to go out is that there is going to be help out there. I would hope that you would temper that with that this is not the Big One, and there's no reason not to go out there and prepare, and that you can't — and don't expect it all the time, because I'm afraid that a false message might get out there.

CHIEF SMITH: Good point, and I'm glad you brought that up.

I certainly — if I've learned one lesson better than any lesson at all, it's the value of a plan. And you're going to see one fine plan from the City of Watsonville when we get done with this operation, because there's a lot of stuff that we just had no idea were needs until we'd gone through — went through it.

COMMISSIONER BERNSON: If you have anything to do with it, I'm sure it will be.

CHIEF SMITH: That's one thing, yeah.

But, secondly, there is an amount in emergency services that we knew existed a long time ago, but just in one of your basic structure fires, you get on the scene and you think, "I've got this engine and one other engine and me, and I've got that burning — I've got that emergency in front of me." And then they don't think about, "Hey, if I just stop for a minute and ask for help, I could have some more support on the end." It's a phenomenon like a moth going to a lightbulb and staying there, and not seeing, you know, peripherally.

And so, part of that plan is to realize that you've got to use the system and you've got to ask. And it's going to still be a timeframe before you're going to get the help, but at least it's in the system.

But I talked to a guy at the county who is a good friend and a good thinker, and he called for seven strike teams immediately after the quake. Within five minutes, that's the first thing he did. He happens to be the coordinator, or assistant coordinator, for the county emergency services. Seven strike teams he called for right away.

I wish I'd have known he did that, because one of them went right through our city and right on up to where he had requested, because I would have captured that group myself.

(Laughter)

CHIEF SMITH: I only found out about it today, and they were on Riverside Boulevard, and I didn't get them.

So, the next night, though, I did. And those strike teams proved very valuable. I mean, they came in at a time — they organized, and rather than burn our guys out, we just rotated them through every emergency call.

I agree. Plan first, but don't fail to ask. And I will remember to add that in any time I mention that in the future.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: I hate to be redundant and all, but I also echo all the Commission's comments in applauding your efforts, and also, I was here two days after, and we briefly spoke, and I'd also like to extend our appreciation for your spending that time, that valuable time of yours, in kind of letting us know what you needed in Watsonville at that time.

Also, I have a particular interest in health facilities, and I was just curious to know, from your experience from the Loma Prieta earthquake, how was the performance on delivering health services to people at that time? And were the health facilities ready and available for service that needed to be rendered?

CHIEF SMITH: Well, as you probably know already, the Watsonville Hospital thought they were going to have to evacuate immediately because of the damage they sustained. Their generator also got knocked off-line. Their fuel lines were severed, and it looked like they were going to have to dump the entire — evacuate the entire hospital, which in itself is a feat, much less also have incoming injuries and wounded.

The fire chief in Freedom, Ben Evans — if you get a chance and you want to talk to somebody who's had a real experience and is very capable — he did a tremendous job of coming in there and just offering that emergency management skill that people who deal with emergencies on a daily basis need to be involved with, any kind of a health emergency like that, and that he was able to come there, establish a command post, get — the director of the hospital was there, and the lead person in charge of the nurses was there, and they validated the plan that they — that these three people developed in that emergency.

They had an oxygen tank listing 15 percent, ready to go over, and a propane tank about 80 or 100 feet away from that. And as you all know, if you get a liquid oxygen leak and any source of ignition, any kind of an impact, and it's a bomb. And so, they had to work on securing that, evacuating the hospital, and receiving the wounded that were coming in from the field, and they did it.

They learned some lessons about where to put their triage area and how to organize for the emergency management that you need to go through that. But they did it, and, in fact, stabilized and evaluated and moved people back into the hospital once they found out it was safe to do so.

And they helicopters, mass care, land and pick people up that were the most wounded, and get them off into other hospitals. The system worked real well.

And the City, we knew we had to deal with the mass casualty issue with regards to treating injuries. And it was fortunate that we a group, Salud Para La Gente, that works in the downtown area. They set up a clinic immediately in the plaza. They stabilized and had doctors there, we had health care specialists there, we had firefighters there with lighting and support, we had a radio for them so they could communicate back to us on real emergencies, and they were able to organize the injuries to help in the downtown area.

We needed something like that in various districts of the city, to have treatment areas where people could come into triage, be treated, and transported.

The story of the Watsonville Hospital is one I think you should look into, because they pulled off — well, about two or three people in the department pulled off a tremendous feat in being able to deal with that disaster.

CHAIRMAN CLUFF: Chief Smith, we thank you for — you're a wealth of information. We'd love to stay longer, but we've run out of time.

CHIEF SMITH: Thank you.

CHAIRMAN CLUFF: Thank you very much for coming here.

This completes this part of the hearing in Watsonville, and we will adjourn and reconvene in Santa Cruz at 2:30 at the Dream Inn to continue this process.

Thank you.

(Thereupon, at 12:25 p.m., the hearing was adjourned, to be reconvened at 2:30 p.m.
in Santa Cruz, California.)

## —o0o—CERTIFICATION AND DECLARATION OF TRANSCRIBER

I, Cynthia M. Judy, a duly designated transcriber, do hereby declare and certify that I have transcribed Tapes 1 through 7, which were recorded at the Seismic Safety Commission's hearing on the Loma Prieta Earthquake, which was held in Watsonville, California, on November 14, 1989, and that the foregoing pages constitute a true, accurate, and complete transcription of the aforementioned tapes, to the best of my ability.

Dated: November 30, 1989

CYNTHIA M. JUDY
Transcriber

# California Seismic Safety Commission

## Loma Prieta Earthquake Public Hearing

## Santa Cruz

November 14, 1989
Dream Inn
175 West Cliff Drive
Santa Cruz, California

**Loma Prieta Earthquake Hearing**
Santa Cruz
November 14, 1989

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## PROCEEDINGS

CHAIRMAN CLUFF: We'd like to begin the hearing this afternoon in Santa Cruz, the Seismic Safety Commission continuation of our hearing from this morning, held in Watsonville.

We welcome those who are sitting in the audience, and we are starting on time because we have a very full agenda, with one problem: the first couple or three speakers are not here. So, in order not to lose the time and to provide an opportunity for individuals that may be knowledgeable about things that would be of interest to our Commission, we would like to give any of you sitting in the audience an opportunity to spend a couple of minutes to share with us your knowledge of what worked, during the earthquake, what didn't, what we, as the Seismic Safety Commission, can do to help improve, together with others, the situation that may need improving.

And so, any of you that would like to address us, you're welcome to do so. See any — is anyone interested?

MR. GAYNOR: Yes, yes I'd —

CHAIRMAN CLUFF: Yes, come on up to the table, the microphone, and tell us who you are, who you represent, and what you'd like to talk about.

MR. GAYNOR: Okay.

Hello, my name is Christopher Gaynor. I'm a member of the community of Santa Cruz.

First of all, I would like to request that the record of these hearings would remain open for further submissions from the public, at least for another 30 days, by written or oral communication.

CHAIRMAN CLUFF: Sure, no problem. Just send the information to our Commission office in Sacramento, and they'll become part of the public record.

MR. GAYNOR: Thank you.

Secondly, the question is, the reports that will be made, these will be made available to the general public, I assume?

CHAIRMAN CLUFF: Yes, they are a matter of public record, and we will be issuing a volume that will not only have the proceedings from these deliberations — this is the fourth, or fifth, and we have one more tomorrow in San Jose — and we'll also, with that document, have our own analysis and some recommendations.

MR. GAYNOR: Thank you.

A further concern that I have in regard to the events of the last few weeks, and something that I've been following over the last number of years, is — and a question that comes to my mind is if you would be planning on looking into the responsibility that the City of Santa Cruz had in perhaps having deferred, as public, elected officials, to private interests at the expense of public safety, because I think if you begin to examine the evidence — I guess we could call it — that exists, there would be some question in my mind to indicate that this could, in fact, indeed be true.

And if that were so, I would hope, certainly, that in terms of any future accountability on the part of the City of Santa Crua, that this would be taken into account in the report that you would be making.

CHAIRMAN CLUFF: That's an important issue to bring up, and let me just follow up with a comment and then ask you some more questions.

What you've raised is an important issue that has to do with what level of seismic safety is appropriate, how much Santa Cruz or California or whatever can afford, and then, who is responsible for making the value judgments on what we can afford and how much risk is acceptable.

There's no such thing as absolute safety when it comes to anything, particularly earthquakes, so there has to be someone who makes a judgment about the level of safety or the level of risk that we are willing to take. And those individuals should very consciously make those decisions and judgments, and they should be held accountable for those actions in whatever way that we feel is appropriate.

So, it would be useful to us if you'd be a little more specific. Are you talking about unreinforced masonry buildings that should have been improved and were not? Could you be a bit more specific?

MR. GAYNOR: Yeah, that would certainly be one aspect. I think partly this could be taken back to the period of time in which David Steeves was the chief building inspector for the City of Santa Cruz, and if you look into reports and ordinances that Mr. Steeves was involved in, and also that the buildings that he was responsible for overseeing the retrofitting of in Santa Cruz came through the quake fine.

I had some suspicions here that what may have happened was, in fact, that the Downtown Association, which is primarily a publicity organization for the city — I guess related with merchants and property owners on the mall — actually was dictating in their own interest to the city council. Or at least the city council was deferring their responsibilities to the general public. And I think if you go back into the city council minutes from 1987, beginning in February, and follow that out, and look at that in relation to Mr. Steeves' work, I think that there's some interesting discrepancies that begin to appear.

And I have — personally, I feel like this is not what publicly elected officials should be doing, if. in fact, it should turn out to be so. And this is why I've come to speak today, because I feel like this is an area of grave concern, not just in terms of the past, but I think also in terms of the future of this community.

CHAIRMAN CLUFF: One thing that I need to distinguish, that this Commission is not a regulatory body. Our Commission is advisory to the governor and the legislature, and we work with those bodies as well as the public in general, to try to help the situation and anything that you might enter into our public record could be used by others. So, it's fine to get the issues on the table.

We can't directly, as a Commission, take any action by ourselves that has to do with disciplinary procedures. But having it on the public record, if someone feels that's appropriate, then they will have to use that as evidence in some of their proceedings.

MR. GAYNOR: Right, I understand that.

CHAIRMAN CLUFF: Sure. Fine.

MR. GAYNOR: This is why I came before you today to speak, just to at least have this in the record.

CHAIRMAN CLUFF: Maybe there are some questions from the commissioners. Tom?

EXECUTIVE DIRECTOR TOBIN: Well, the point you raised, I've heard this story before, and I think it's an important story that we're very interested in, not so much in terms of the actions by officials in Santa Cruz, because that's really for others to decide whether it was proper or not proper, but in terms of the issue of how a building official, who has a concern about public safety, is able to create the programs that are necessary.

We find that in many jurisdictions, the same issue is faced, with the building official recommending a program that he's not comfortable with because he feels it's the only thing that's politically acceptable, or a building official or a mayor who will say, "Well, we're just not going to do it because it will affect downtown business too much". And it's a problem that many other building officials face statewide.

The more that we can learn about and the lessons we can draw, perhaps we can use it to help others carry out the mission of improving the safety of buildings. Your information is of extreme value to us.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. I think one other issue that's always come into play on this is, of course, economics. And the Commission has sponsored quite a bit of legislation, as far as tax credits, tax deductions, bonds, and things like that, so that the owners of the buildings will be able to afford to do it. That has not always met with a lot of success.

Senator Alquist had a bill this last year to provide a loan guarantee for people who are retrofitting their buildings, because one of the problems is that even those owners that wanted to retrofit their buildings weren't able to obtain financing, because the banks were not willing to lend on retrofitting the unreinforced structures.

So, I just wanted to let you know that that's one of the issues that has come into play on a lot of structures — I mean on a lot of these programs, as to what kind of incentives are available.

The City of Los Angeles is pushing bonds and been pursuing other incentives too. So, those things have to be considered too.

CHAIRMAN CLUFF: Hal?

COMMISSIONER BERNSON: I think you've raised a very important point, and I don't think it's really Santa Cruz we're talking about or Watsonville. I think we're talking about the state in general, and what could have or should have been done in the past to try to mitigate the effects of the earthquake, for example, passing legislation at the state level a little more expediently, having the governor sign it a year earlier — things of that nature that could have prevented the loss of buildings, the loss of life, the displacement of people's businesses, homes.

The real question, I think, that should come out of some of our deliberations — and maybe this is the wrong time, but we've got a little time — is that — what we do now? Should we sit and wait for SB 547 to run its course? Or do we make the recommendations, as a Commission, that we should to the governor and to the state legislature to, in fact, speed up the program, get a piece of legislation in effect that will adopt a UBC requirement for upgrading these pre-1933 buildings, and perhaps some of the buildings which are prior to 1971, which may also be suspect? Do we sit back and just wait and see what happens, or do we step in and make that recommendation?

Because most of the communities don't know what they're supposed to do, other than make an inventory. Some of them are merely prepared to make an inventory and say to the owners, "Well, now do something about it". And there's no standard, even though this Commission adopted a standard two or three years ago that could have been used for a model ordinance. Some other cities have adopted ordinances and effected — Los Angeles adopted one in 1981. We're about 90 percent through our reinforcement. The City of Long Beach adopted an ordinance in the 1970's, I guess it was.

So the real question is, what do we do as a state from here on in? We're not going to change anything that's happened in this past earthquake. The question is, what do we do about the future? Do we really get the ball moving now to provide and force these buildings to be upgraded, to provide the financing, the mechanism that will allow for financing so the owners can do that?

And it isn't as simple as tearing them all down, because when you tear them all down, you displace businesses, jobs, residences. And in many cases, particularly in Los Angeles, we had over 100,000 people living in unreinforced masonry buildings. Well, they simply could not be replaced, either the housing or the level, economically, that these people could afford.

So these are the problems you run into when you talk about acceptable risk. Now, I think that we've got a very tough decision to make in making our recommendations, but I hope that we will make the recommendation to the state legislature and the governor that we act immediately to speed up the program and to make the funds available to get this done, so when the next quake comes — and it will, whether it's in Santa Cruz, or Los Angeles, or San Francisco, or wherever it may be — that we're prepared and we don't lose those lives and those properties.

So, I think your point is well taken, but I don't think you can really point the finger to the officials here in Santa Cruz. They're just like all the officials all over the state. I mean, you know, there are hundreds of cities that are in the same position, and for the very same reasons. So, I think that the leadership is going to have to come from the state, and that's where the impetus is going to have to come from.

And I hope we make that decision, and make that recommendation.

CHAIRMAN CLUFF: Thank you, Hal.

Other Commissioners?

Well, thank you very much for —

MR. GAYNOR: Thank you.

CHAIRMAN CLUFF: — coming forward.

We now have one of the speakers. It's out of order, but — out of sequence, not out of order. City of Santa Cruz, Peter Katzleberger, Planning Director.

If we could have you, Mr. Katzleberger, come up and talk to us about what we as a Commission can do to help you in your job, help other cities learn from this event, so that what worked, we can point out and cheer, things that didn't work, if we can improve them and do a better job next time, and without pointing any fingers at any individuals, but to make this a positive experience to increase our level of seismic safety.

MR. KATZLEBERGER: Thank you.

I'm Peter Katzleberger, the Planning Director for this city.

My basic pitch is that to further the cause of seismic safety in the future, I think the most important thing to do that is money. I jotted down the word when you introduced the subject matter because you said "afford," because I think that's really the key to the equation that's before the city: what can we afford?

We know — we just talked about seismic safety regulations in L.A., in Long Beach, other places. I think seismic safety programs are not unknown. There are some pretty good examples. I think the question of whether or not the models can be put into place and made acceptable to the community — I think it's a matter of funding.

It's one thing to write a set of regulations if there — if the property owner has a hard time complying with them, we're not advancing the cause very far. So, I think money is really at the base of — is the basis for any effective kind of an action.

For what it's worth, in looking at seismic safety, because we were aware of seismic safety issues in this city, we asked Senator Mello to sponsor an amendment to the Mello-Roos bill that would make it available — the Mello-Roos Act available to seismic retrofit. The governor vetoed that bill.

We can push regulations back and forth and debate them, but there are very great economic realities that we cannot ignore, no matter what the noble objective of any program may be, particularly, I think, in Santa Cruz, and probably in some other cities.

So, rather than pushing around regulations that will make their adoption — with the prospect of their adoption very difficult, I think, for my money, my approach is to find a way of doing things by way of finding financing, money for people to do retrofit with, and then to look to the program, because if I talk to a business community and I say, "We have a program of — a seismic safety program, and we have some money or some way of dealing with it," I think they're going to be much more susceptible to asking what the retrofit program is, and what the regulations are if they can carry it out, rather than telling them, "Here are a bunch of regulations; they may bankrupt you, they may tear your building down, or else they may strengthen the building". I think that's a very bad context in which to discuss seismic safety.

But I think if we emphasize the funding side of it, then I think the regulatory aspect comes right along with it. That's basically all I have to say.

CHAIRMAN CLUFF: Okay. Are there questions?

Hal?

COMMISSIONER BERNSON: Yeah. What are you, as chief planner for the city, in reference to the area that received most of the damage — most of that was along fill, I understand — what are the plans, if any, that have been made as far as reconstruction are concerned?

MR. KATZLEBERGER: Well, the area's not primarily — it's not artificial fill. It's alluvium from the flood plain.

COMMISSIONER BERNSON: Yeah.

MR. KATZLEBERGER: So, it's natural deposits.

I'm sorry, what kind of — what are we doing about reconstruction?

COMMISSIONER BERNSON: Have any plans been made as far as reconstruction? Type of buildings, codes that might be used in the same places, and so forth?

MR. KATZLEBERGER: Not definitively. I think we are in the process of, right now, talking about the codes that we ought to be looking to adopt in connection with any kind of reconstruction.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: Do you have a redevelopment plan for the city?

MR. KATZLEBERGER: We have a redevelopment agency and several projects.

COMMISSIONER KOCKELMAN: Do they have something for the damaged area, like Coalinga had?

MR. KATZLEBERGER: Our problem in our redevelopment area is — right now is — we have a, probably, a negative property value, a negative tax increment in the district. I think our financing capability has been hurt by this earthquake.

COMMISSIONER KOCKELMAN: Yeah. Put that aside for the moment. How about the concept of redeveloping old, you know, poorly constructed buildings over time? You know, a lot of the building stock in communities like Santa Cruz is old.

MR. KATZLEBERGER: Sure.

COMMISSIONER KOCKELMAN: Yeah. And some of it's economically and functionally obsolete. It's just kind of been passed out. Not just —

MR. KATZLEBERGER: Right.

COMMISSIONER KOCKELMAN: — Santa Cruz, but many communities. Is there any kind of conceptual idea about redeveloping these areas, before the earthquake, you know?

MR. KATZLEBERGER: I think any seismic safety program consists of a whole bundle of different kinds of programs, including the building code and financing tools and other things. I don't think there's any doubt that, with or without the earthquake, we are moving in an area of addressing the issue on a broader basis.

A few years ago, we adopted just a minor program requiring some cheap retrofit measures on residential buildings, which was easy to do, because everybody can appreciate it. A few hundred bucks of anchor bolts and plywood can do major, positive things to a structure.

The problem, of course, becomes a whole different problem when you're talking about hundreds of thousands of dollars to retrofit a URM building when you don't really see a particular — when the prpoerty owner doesn't see a particular payback for that.

COMMISSIONER BERNSON: Do you have a wall anchor ordinance for residential buildings that was passed here?

MR. KATZLEBERGER: We — excuse me — we passed an ordinance that requires, I think, a one percent expenditure — if a building project — a one percent expenditure towards things like anchor bolts, shear nailing, and that kind of minor —

COMMISSIONER BERNSON: So, there has been some strengthening of your residential URM's, huh?

MR. KATZLEBERGER: Right.

CHAIRMAN CLUFF: Mr. Katzleberger, in some of our other proceedings, not necessarily after this earthquake, but prior to this, we've — the issue that you raise, the money, is a big one, and we certainly understand and appreciate that, but it seems to me that in some of our presentations. we've had individuals who throw up their hands and say, "Well, give us the money and we'll get it done."

On the other hand, there are individuals and departments who develop a plan that shows what they could do if they had "x" amount of money, "y" amount of money, "z" amount of money, and give some options, so that at least they're moving ahead and setting priorities, so that if they do get a tenth of what they'd hoped they'd get, at least they can do something rather than, "Well, we can't do anything unless we have a lot of money poured into it."

I'm wondering what's being done in Santa Cruz in terms of developing a plan, so that when money is available, it can be used effectively?

MR. KATZLEBERGER: Well, obviously, we're looking now at code requirements for reconstruction that address the seismic safety issues. In general, I think the whole process, I think, is sort of a cumulative kind of an effort where you do what you can at any given point.

And I think it's — I just think that if you don't have the resources, or can point to the resources that are available, it's that much more difficult to advance a particular regulatory kind of a program.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Could you tell us just a word or two about how Santa Cruz was dealing with Senate Bill 547 with respect to the inventory and survey of your URM buildings?

MR. KATZLEBERGER: Well, ironically, one of the council meetings just around the earthquake was a meeting at which we had scheduled council action on the Seismic Safety law. The staff proposal, essentially, was to try to segment the issue and deal with parts in order to advance some, even if others didn't.

And we were proposing to meet the requirements of 547 by way of reporting to the Seismic Safety Commission and to property owners, then to follow up with mitigation programs subsequent to that.

COMMISSIONER SCOTT: Yes. Notify the owners.

MR. KATZLEBERGER: Right.

COMMISSIONER SCOTT: And then take up mitigation later.

MR. KATZLEBERGER: Right.

COMMISSIONER SCOTT: Yeah.

CHAIRMAN CLUFF: Yes, Bob?

COMMISSIONER McCARTHY: Right. I thought I understood you to say that you had actually formulated a set of specifications and requirements for the reconstruction of the damaged buildings?

MR. KATZLEBERGER: Well, we're looking at the UBC, we'e looking at the L.A. ordinance and some other regulations to see which suits our purpose the best at this point.

COMMISSIONER McCARTHY: Have you eliminated the possibility of allowing them to rebuild as the buildings were before?

MR. KATZLEBERGER: I don't think anyone's taken any official action on the question, but I don't — I can't conceive of an approach that would simply allow rebuilding what was.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: I have a question regarding your safety element, the seismic safety element of the — clearly we don't have time to go through the whole thing, but would you describe it briefly, and tell us whether or not it had any effect in Santa Cruz?

MR. KATZLEBERGER: I think it had an effect in the sense that it collated and put together some information about hazards, and was the basis, I think, for certain other actions that the City took since its adoption. It's an old document. It was adopted in the '70's.

EXECUTIVE DIRECTOR TOBIN: Um-hmm.

MR. KATZLEBERGER: So, I can't say it was something that everybody pulled off the shelf every day and made sure they read a chapter of. But I think it did document some physical facts of hazard areas and different kinds of hazard areas.

I think, you know, we used it in doing our project reviews where environmental considerations might be evaluated. I think it stipulated things like emergency plans, and so on. So it kind of contributed, I think, to furthering the city's emergency responses in various areas.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes, first of all I'd like to thank the City of Santa Cruz for the support of various seismic safety measures that have been before the legislature. We've seen some of the City's letters as well as the county's letters in support of some of the measures.

Secondly, I wanted to ask you, in reference to the Pacific Garden Mall, where I think there were three or four deaths, I know they were in relation to masonry structures. Do you happen to know if they were retrofitted, and if so, to what extent they were retrofitted?

MR. KATZLEBERGER: I don't really know. I don't think they were, but I don't really know what —

COMMISSIONER UMEMOTO: So, as far as you know, they were unreinforced masonry structures that collapsed on top of an adjoining structure?

MR. KATZLEBERGER: Right.

COMMISSIONER UMEMOTO: Okay.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: You know, Tom Tobin asked you a good question and you gave a candid answer. What's the chances — I know you've got a lot on your plate right now — but what's the chances of updating that seismic element?

MR. KATZLEBERGER: Well, I —

COMMISSIONER KOCKELMAN: You'd take the lead on that, probably, under the —

MR. KATZLEBERGER: It's going to be updated. The Planning Commission talked about it at a recent meeting. They were doing their own post-earthquake assessment, and "What do we do now?", and "Where's there room to do better?" And the Planning Commission has already gotten in contact with UCSC to hook up with people who are doing seismic studies, so that we, first of all, get a good data base, and then go on from there by way of various programs, I suppose.

COMMISSIONER KOCKELMAN: You know there's a lot of information out in guide books and examples and there's a lot of people, like people on this Commission, that'll send you anything.

MR. KATZLEBERGER: Sure, and you have.

(Laughter)

COMMISSIONER BERNSON: I have one more question.

CHAIRMAN CLUFF: Tom has a question here first.

COMMISSIONER BERNSON: Oh, I'm sorry. Go ahead, Tom.

CHAIRMAN CLUFF: Go ahead, Tom.

EXECUTIVE DIRECTOR TOBIN: Okay, thank you.

Many of us shed a tear when we saw the wrecking ball hit the Cooper House, and obviously, for a lot of us, Santa Cruz, and the Pacific Garden Mall had a very special ambience that is certainly in jeopardy, if not diminished by now — a tremendous loss for the city.

In the Bay Area, again, a long way away from what was happening here, we were hearing that the decisions were premature to tear it down. Can you tell us a little about the decision process on, I guess, the red-tagging of buildings that had special significance to your community, and how those decisions were made?

MR. KATZLEBERGER: I wasn't personally involved in any decisions, so I can't give you any kind of firsthand report, but being in the system generally, and generally aware of what's going on, I think the — I'm personally satisfied that when decisions were made, they were made only after exhaustive questioning whether that particular decision had to be made. And it wasn't made by individuals on a casual basis.

But when there were questions, as I understand it, there were repeated inspections by inspectors of various sorts, structural, some with expertise in historic preservation matters. So, I'm — personally, I'm satisfied that we didn't panic into a demolition process.

EXECUTIVE DIRECTOR TOBIN: The demolition, in fact, has been only a few buildings, at this point. Is that right?

MR. KATZLEBERGER: Well, "a few"? It's a lot. Because if you are —

EXECUTIVE DIRECTOR TOBIN: Approximately how many have been —

MR. KATZLEBERGER: I don't know. Probably 10, 15.

CHAIRMAN CLUFF: Hal?

COMMISSIONER BERNSON: Yeah, I just have one more question.

I take it, then, because you mention the fact that the City Council was prepared to act on the inventory, they had not acted as far as compliance with, — by the end of the year, with SB 547?

MR. KATZLEBERGER: We will. They haven't acted yet, but I'm sure we will comply with the law.

COMMISSIONER BERNSON: It's in about a month?

MR. KATZLEBERGER: Six weeks.

COMMISSIONER BERNSON: Thank you.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: If FEMA prepares what they call a mitigation plan after a disaster, and they have local governments participate in the preparation of that, and then they have a 50 percent grant-matching for mitigation — which may be saved for retrofit, or other things like that.

Has FEMA contacted you about the ability to integrate this with your SB 547 program, or given you any information on this 50 percent match provision for the mitigation plan?

MR. KATZLEBERGER: I haven't received that yet.

COMMISSIONER PESTOR: Okay.

CHAIRMAN CLUFF: Thank you very much. We appreciate your comments.

MR. KATZLEBERGER: Thank you.

CHAIRMAN CLUFF: The next part of our program will be Dr. Karen McNalley.

Karen, if you'd come up to the table with the microphone, we'd appreciate that.

Karen is director of the Richter Seismological Lab. She has a lot of experience with California earthquakes, having worked a great deal in Southern California on earthquake preparedness. And she now is here in Santa Cruz, and, as all of us did, had a firsthand experience of this earthquake.

And so, Karen, our purpose here today is from a commission's point of view, representing the citizens of the State of California. What can we, as a Commission, do to understand what worked well, what didn't work, how can we improve the aspects of decision-making that have to do with seismic safety?

And if you could give us a few comments and then be available for questions, we'd appreciate it.

DR. McNALLEY: Fine. Thank you, Lloyd.

I know many of you very well, and welcome to Santa Cruz.

The first important point that I would like to make is that I've brought a T-shirt here, which I hope you'd all consider buying. It goes to the benefit of people who lost their homes in the mountain regions. And my assistant has come and brought that with us. It says, "Okay, okay. It's our fault".

EXECUTIVE DIRECTOR TOBIN: I'm sure each one of the Commissioners will buy one.

(Laughter)

DR. McNALLEY: Shortly after I leave here, I'm on a plane to Pasadena and Southern California, where I spend a lot of time also, and I'm going to ask them to do the same.

I thought that it would be useful, perhaps, to share some perspectives that I as a seismologist here in the middle of the earthquake experienced, and some observations and preliminary scientific findings.

I believe that you have copies of the article which I was asked to prepare for the American Geophysical Union, a publication called Eos.

We have attempted to span out over a number of different areas simultaneously, and one of the first critical things was that of the lack of accurate information on the magnitude and estimated rupture length of the earthquake.

For earthquakes which are magnitude 7 and larger, the magnitudes, definitive magnitudes, come from the U.S. Geological Survey in Colorado, and are based on a set of global seismographs. Unfortunately, these data are not available in real time.

And thus, the information, as it trickled into us here at Santa Cruz, as we were trying to answer questions without much information, I must say, and at the same time design field experiments to make measurements as rapidly as possible before ephemeral data disappeared, was hampered by the lack of a definitive fault mechanism and magnitude for the earthquake.

I understand, also, that the governor's Office for Emergency Services received initially a much lower magnitude than the earthquake turned out to be. And they are a highly-tuned organization, and they are concerned, as I understand it, that they might under-plan their response.

I would say, of anything, from among all of the things which have been suggested that might be done — this is something that is no longer in the archives of science; it's not research — it's simply networking communications, and that those data could be available for a final magnitude in real time, if there were enough stations that came to Colorado and it went directly to Sacramento.

About 20 stations could be tuned to California. Research for prediction, as you know, I feel very positively about. However, in this case we don't have to wait for the research. In six to twelve months, this could be implemented. And I'm not talking about any new effort; I'm just talking about accelerating the existing efforts.

The second point is that we don't know which fault will break next, but I think we all agree that a large earthquake could come in the near future. It could be Southern California, it could be Northern California. This would benefit the rapid response statewide. So that's one point, one observation.

A second observation is that the advisories which were given by the state following the magnitude 5-ish earthquakes in 1988, June 27, and October 8, 1989, I understand, were very, very helpful. These were advisories that a larger earthquake, from the size of magnitude 6.5 to 7, could occur. And the window — the time window was five days. That allowed everybody, including the scientific community and ourselves. to dust off our instruments and our plans. As a result, we were able to install instruments — we did install instruments on the fault rupture zone, digital strong ground motion instruments, A-700's. They recorded the main shock as well as all as all immediate aftershocks. So, I think that's another point worth remembering.

Another point that I think is important is that the — there has been widespread uplift, it appears, of this coastal region. It's predicted to be at about half a meter along the Santa Cruz coast. The observations to date tend to substantiate this.

Reconnaissances which we've been doing along the coastal area indicate that there is on the order of 15 centimeters uplift in the region of the yacht harbor. And it's expected to be larger in the region of Aptos and Rio Del Mar.

The insliding of sands produce small scarpments. But the shallowing of the water appears to be caused by the vertical deformation, which is not something we've thought about a lot about before. And there are delicate balances between the rivers and the bay, silting, dredging, all of those activities. If there is a permanent uplift as a result of the earthquake, we should take that into consideration in our planning, and distribute — and distribute this information. We should rapidly try to verify and distribute it so that the appropriate coastal measures are taken.

There are measurements which are on schedule for January and February, and I have a list of those. We have been attempting to get the City to not only measure benchmarks within the City, but to carry them out to the tide level, so that we can tie it to a baseline, to know the relative uplift all along the coast.

There are other agencies — and I have a list of those I'd like to leave with you. Perhaps you can assist us in asking them to accelerate these measurements and make them available to the scientific community.

Finally, I have some pictures I can show you, if you have time.

CHAIRMAN CLUFF: Why don't we do it very rapidly and take a look at them?

(The following remarks were accompanied by a slide presentation.)

DR. McNALLEY: You need to show me exactly how to do this.

Well, these are the credits. We are the source, at the Richter Laboratory, at the University of California, Santa Cruz; however, the data are not only our own, but also the U.S. Geological Survey, and the California Division of Mines and Geology. So, I want to be sure due credit is given.

This shows the deployment of four-station, solid triangles that we deployed following the magnitude 5 — what we'll now call pre-shocks, which are stars along the fault which I referred to previously. The large star, just north of Aptos, is the current location of the hypocenter of the U.S. Geological Survey.

This is the longitudinal section which shows the hypocenter and the first aftershocks.

And this is a cross-section — sorry — and shows those pre-shocks. This is the cross-section with that, the cross-fault — of those pre-shocks and the hypocenter.

I understand there's some controversy about the fault mechanism of those earthquakes, and that's a point of research at the moment. But I think we've called them pre-shocks of some kind.

This is our accelogram on the fault trace near the intersection of Highway 17, southwest along Bear Creek Road. This instrument, unfortunately, could have moved roughly a centimeter, we think, on its pad. It took a very strong shake. The accelerations exceeded 100 percent g, one vertical and one horizontal, the other horizontal 80
percent g.

We then redeployed with additional instruments, as soon as the main shock occurred, around its digital strong ground motion data, and these are the aftershocks, the longitudinal section of the first two days of aftershocks, and the cross-section.

You can see the vertical string of activity coming up from the dipping fault plane on the left side. That's the west, near Watsonville, and it's on a lineation which appears to be some kind of fault reactivation.

These are the peak ground accelerations that we were aware of as of a few — a number of days ago. We produced this almost immediately, and it was rather useful. The symbol size is scaled with the size of peak acceleration. The smallest symbol is less than 20 percent g, the middle-size symbol is greater than 20 percent g and less than 50 percent. The largest symbol is larger than 50 percent g. It's an interesting figure because, first of all, it shows the concentration of higher accelerations in and near the fault zone, and also shows the obvious soil amplification effects.

This is the spectra of the difference between our strong ground motion record on the fault tracing, shown in black, and red is the one on the UCSC campus, the same type of instrument.

This is the time sequence, to give you a sense of scale. I'll be presenting this to the regents the day after tomorrow in Los Angeles — tomorrow. It gives you a sense of scale and scope and the magnitude of the earth forces that we should keep in mind. And for that purpose, I'm showing it in three dimensions.

These are rotations. You're looking now, down with depth, into the earth. The pink star is the hypocenter from which aftershocks spread out. This is the first twelve days of aftershocks. Southeast you can see the shallowing of the aftershock zone.

As we rotate around it, you can see how huge this is compared with the scale of the Santa Cruz-Monterey Bay itself. You can see the dip angle here quite clearly.

Longitudinal picture you're seeing — now you're looking down on it. You can see how its trends follow the faults.

This is now a time sequence of the activity in two-month intervals from June, 1988. Reds and yellows are the largest events, blue and green are smaller. This is the activity before the main shock, then, starting with June, '88. The red is the 5-ish. You're looking down into the earth. It's very deep, almost to a depth approaching that of the subsequent hypocenter.

As we look through time in these time shots, you can see the background activity.

Then, again, coming up now, you'll see that there, again, are a second group of earthquakes. Red are magnitude 4 and larger. One of these was magnitude 5.2, August 8th, this summer. And you can see the increase in seismic activity. Our investigation showed that magnitude 2.5 and larger threshold, there has been about seven years of seismic quiescence in this fault segment, relative seismic quiescence, until these magnitude 5's occurred.

The fault seems to be rather active, here, and now the main shock occurs at the hypocenter depth. Every frame here is one hour, for the first 24 hours of aftershocks following the main shock.

Rupture propagated up. This shows the uneven distribution of the activity in aftershocks, hour by hour, as the faults slips and attempts to come into equilibrium of some kind. You can see it's very nonuniform.

I should say once again, these are all preliminary data. These have been relocated by Andy Michael at the USGS.

The first 24 hours I've selected because they will mirror most closely the actual rupture plane of the main shock itself, without an abundance of stress redistribution.

This is the predicted vertical uplift from the geodatic mechanism provided by Jim Savage, a preliminary one. We ran it through a program to get the vertical component. Here you can see the prediction for the Santa Cruz harbor and bay area. You can see the large uplift zone tilting down, with the gradient tilting down toward the ocean on the west, and the difference in the pattern on the northeast.

So that's the end of my pictures.

EXECUTIVE DIRECTOR TOBIN: What's the scale on that?

DR. McNALLEY: The vertical scale is in fractions of meters.

CHAIRMAN CLUFF: Fine. Karen, do you have additional comments?

DR. McNALLEY: No, I don't.

CHAIRMAN CLUFF: If not, you're open for questions?

DR. McNALLEY: Yes.

CHAIRMAN CLUFF: Okay, let me be the one to start out with a couple.

Thank you for that interesting display. I've seen those before, but that was certainly very effective for scientists to see that and understand the rupture process.

You mentioned the A-700's, was it?

DR. McNALLEY: Yes.

CHAIRMAN CLUFF: How many did you have in the field prior to the earthquake?

DR. McNALLEY: Four.

CHAIRMAN CLUFF: Four, uh-huh.

DR. McNALLEY: We added five, to a total then of nine.

CHAIRMAN CLUFF: And the one that recorded the one g — in excess of one g, how much in excess of one g?

DR. McNALLEY: I had set that one at one g, thinking that was a satisfactory range —

CHAIRMAN CLUFF: Oh, I see.

DR. McNALLEY: — and so, we don't really know. And also, there is the concern about documenting, and we have to do a lot of work on the record because the pad may have moved one centimeter.

CHAIRMAN CLUFF: Yeah, I was going to — now my next question was, you're suspect of that record because of that? It could have added to the acceleration?

DR. McNALLEY: Some people who have looked at it suggested that this actually was the lower bound, that probably it was on the order of one g. There are also reports of some geologists who have seen tables, I believe, that were lifted vertically and came back with one leg in a bucket, without tipping the bucket. So there are a few stories like that. So it's my guess that it could have been an acceleration that high.

It's right on the knot where the fault takes the bend.

CHAIRMAN CLUFF: Um-hmm.

DR. McNALLEY: It's on the southwest side, so it would get a really strong kick as it goes around that bend and has that reverse component hitting it. At a little further distance, we had one which I had set and reset. I set it at one g right after the August earthquake. We weren't triggering, so I set it — I dropped it down to be more sensitive and set it at 50 percent g. Unfortunately, that one also cracked at 55 percent g. That's on Branciforte, 5001 Branciforte.

At the university, we recorded 66 percent Gg— sorry, 47 percent g. At the yacht harbor we recorded 66 percent g in sediments.

CHAIRMAN CLUFF: Have those records been put into the state system? Because I receive all those, but this is the first time I've seen your records.

DR. McNALLEY: We are attempting to do that. There are many, many anxious people who feel that the scientists need to tell them why this happened, in addition to knowing what happened.

CHAIRMAN CLUFF: Sure.

DR. McNALLEY: And I feel that we should work at preplanning in the emergency plans for materials and so forth for the first 72 hours for scientists to give out.

CHAIRMAN CLUFF: Well, that's one of the purposes of this hearing process, is to identify things, so that next time we'll be better prepared and have the resources that we all need to get accurate information.

You mentioned the comment about the uplift, and the need to incorporate these data into regional and local planning. That's certainly a very relevant thing, but as a scientist, was this uplift in this earthquake a surprise to you? It wasn't to me.

DR. McNALLEY: What I can say is, clearly, in retrospect, no.

CHAIRMAN CLUFF: Well, I mean the way —

DR. McNALLEY: Not necessarily. We know that when faults go around bends, they can really have some vertical component, but I never really focused on it —

CHAIRMAN CLUFF: But —

DR. McNALLEY: — before the earthquake.

CHAIRMAN CLUFF: But the extensive —

DR. McNALLEY: So, I have to say I was surprised.

CHAIRMAN CLUFF: The extensive wave-cut terraces that we see — that's part of your campus —

DR. McNALLEY: It's all around us.

CHAIRMAN CLUFF: — clearly show us that this coast is continually coming up and —

DR. McNALLEY: Absolutely.

CHAIRMAN CLUFF: — that should have been no surprise to anyone.

DR. McNALLEY: Absolutely. And I live on one of them.

CHAIRMAN CLUFF: Yes, that's right.

DR. McNALLEY: Far back from the coast.

CHAIRMAN CLUFF: But what the surprise is, I guess, is that this hadn't been accurately communicated to the decision-makers that this might be useful to, and explained to them in a way that they could incorporate it into the planning.

DR. McNALLEY: That's right. I agree with you 100 percent, and that's one reason for my attempting to call attention to this.

CHAIRMAN CLUFF: Good.

Any further questions? Bill?

COMMISSIONER WASTE: Yes. Just curiously, coming from a layman, I've always wanted to ask a seismologist this, and since you're the one who's here — obviously your papers are excellent, you know your subject, you're way beyond me on some of these things — but is there anything that you learned by being there and standing there and experiencing this that didn't come out of your scientific experience? It's got to be different.

DR. McNALLEY: At a personal level, though we had to go on functioning, there's no way to escape the shock that I felt. My daughter was in a dangerous building and was fine. And I've been in many large earthquakes, in Mexico and elsewhere. I thought I was prepared for it, but I wasn't really prepared for the shock that I and my colleagues even, in our laboratory — I could see the symptoms.

Thank goodness I'm on the Southern California Earthquake Preparedness Policy Advisory Board, so I have learned many, many things from being on that about some of the psychological effects. And I recognize them in our own team. So that's one point, at a personal level.

I believe another thing that was stunning to me was to be — it's like a doctor without their bag. Our computers had gone out, and my instruments, I couldn't get to them. And, you know, they've said it hundreds of times to us, "The first 72 hours, be prepared to be alone." And I heard that at a personal level. I never thought of it in a scientific level. My instruments can't work, I don't have power, I'm locked out of the building. Those are some things.

I don't know exactly if you have a specific focus, but — we pulled the telephones out of the window because our building was guarded while they were checking it. I think we need to look into where seismologists and geologists can huddle in the event of an earthquake in our local area.

COMMISSIONER WASTE: Thank you.

CHAIRMAN CLUFF: Further questions? Tom?

EXECUTIVE DIRECTOR TOBIN: Karen, I think this may be a tough question, but one I've wanted to ask. Now, in retrospect, if we were unable to predict this, is this a "post-diction"? I mean, from the information that you showed us, was there clearly something happening that, had we had the intense monitoring and the real-time information, that could have said that an earthquake is about ready to happen on a very short timeframe?

DR. McNALLEY: My understanding is that the answer to that is no. I think we're doing exactly the right things with this CEPEC-OES effort to issue advisories. Those are not predictions. I believe that that's the best we can do right now.

I am encouraged by some comparison studies that I've been making that there does tend to be rather deep, apparent, preshock activity that research might reveal an ability to detect this kind of behavior, deeper than normal. But that's — so, I'm hopeful about that.

But the most basic thing that we can do right now, I think, is get the magnitude of the earthquake right, right away.

EXECUTIVE DIRECTOR TOBIN: Let me ask a question that I would duck if the press was asking me, but let me ask the same of you.

If you had had in place an extensive monitoring network, is the state of our knowledge at the point where we could have seen something happening, had you had the latest equipment along that segment of the fault?

DR. McNALLEY: Could we have predicted the earthquake?

EXECUTIVE DIRECTOR TOBIN: Yes. Would you have seen it coming, I guess?

DR. McNALLEY: And my answer to that is no. I don't believe we yet know how to do that.

EXECUTIVE DIRECTOR TOBIN: Okay, good.

DR. McNALLEY: We are trying to do research to learn more about that. In the Parkfield experiment — but these are research experiments. These are not ready for public policy in application. They certainly should be worked on, but I think my answer still stands.

EXECUTIVE DIRECTOR TOBIN: Good.

DR. McNALLEY: To be the advisors is the appropriate thing for the state level at this time.

CHAIRMAN CLUFF: Let me follow up on that, Karen, becuase we, at the Commission, and others, have received a proposal from one of your fellow scientists to instrument the Hayward Fault. It's a very large amount of money that we're seriously considering.

And so, what some people might perceive as your comments is that we shouldn't even consider that instrumentation along the Hayward Fault, because what good will it do us? Is that what comes out of that, or should we give that proposal very serious consideration?

DR. McNALLEY: I'll look behind me to see if my colleagues are sitting back there.

(Laughter)

DR. McNALLEY: It's my opinion that there are many faults that we know about that have seismic potential for magnitude 7, 7.5, or even 8, statewide. The question that I would have to the state is one of cost effectiveness. I feel it's equally important to instrument the faults in Southern California. We are one state, not — and there are very strong hazards there. There's the Penninsula segment, there's the Hayward segment. We have a lot of population at risk, so how are we going to use our money?

I would like to also point out that there are other faults, that we are now discovering a new class of faults, the "blind thrust" fault category that — and I would note that there have been earthquakes at Coalinga, and, again, on Whittier Narrows, that we didn't even know that those faults really — we hadn't assigned probabilities to those. Let me put it that way.

Therefore, I believe that the first order thing that we can do, which can be done for about $6 million, is accelerate information for response for the plan that's already being done. And that can be applied statewide.

Beyond that, I believe that we need to look very carefully at monitoring systems on several states — on several faults, statewide. And there's certainly a well-known hazard on the Hayward, but it also applies elsewhere in the state. I am a strong believer in the state standing together.

CHAIRMAN CLUFF: Yes. Well, I'm tempted to go into a long discussion about that, but I think I won't, my own, personal interest in where money ought to be spent, but that's an issue that we, as the Commission, will be asked to give some judgments on. Given the availability of some money, where can we spend it most effectively? And there are a lot of arguments in a lot of directions throughout the state, and it's not going to be easy.

DR. McNALLEY: Well, I would say that the theories have always run ahead of well-established facts. And I understand there were no precursory dilatational strain movements, that people agree on, anyway, prior to this earthquake, and there were some measurements. We need to know more, and we need to continue these pilot programs. I believe that we must not neglect response that we do know how to do.

CHAIRMAN CLUFF: All right, thank you.

Pat?

COMMISSIONER SNYDER: Yes. Karen, I believe I understood you to say that we were perhaps slow in being able to receive and analyze the data as to the magnitude and exact location of this particular event. Is that correct?

DR. McNALLEY: Yes.

COMMISSIONER SNYDER: Okay. Then, is that perhaps a reason that we were somewhat slow to understand what had happened —

DR. McNALLEY: Yes.

COMMISSIONER SNYDER: — with Santa Cruz and Watsonville?

DR. McNALLEY: Yes.

COMMISSIONER SNYDER: We all saw 880 —

DR. McNALLEY: That's right.

COMMISSIONER SNYDER: — and the Bay Bridge on our television —

DR. McNALLEY: That's right.

COMMISSIONER SNYDER: — but information was very slow in coming out of these heavily impacted areas. Is that part of the reason for it, do you believe?

DR. McNALLEY: Yeah.

By the way, on the getting more information — complete information from Colorado directly to the state in real time could be done in six to twelve months. It could be accelerated and done that quickly. I would feel much safer to know that, oh, yes, we knew exactly how big the earthquake was.

COMMISSIONER SNYDER: The end result would be a more accurate picture of what has happened.

DR. McNALLEY: Right.

COMMISSIONER SNYDER: More rapidly, then?

DR. McNALLEY: Yes.

COMMISSIONER SNYDER: Thank you.

CHAIRMAN CLUFF: Well, thank you very much, Karen. We know you have another deadline to meet, and we wish you well in your other activities, and we look forward to working with you on where we can spend our money on earthquake research in the future.

DR. McNALLEY: I'm not asking for my institution.

CHAIRMAN CLUFF: No?

DR. McNALLEY: I may ask as a citizen.

CHAIRMAN CLUFF: That's right. Thank you.

DR. McNALLEY: Thanks.

CHAIRMAN CLUFF: Since we didn't have the opening remarks from the Chamber of Commerce and so forth, we do have the opportunity of Ronald Nelson, who is a structural engineer. He works with the Structural Engineers Association of California, and he's a consultant to the City of Santa Cruz. And he's here and willing to answer questions that we might have.

If we could have Ronald come up to the table with the microphone.

And while he's coming up, I might just describe briefly, since you probably just got here, what we're about here, what our objectives are, and so forth.

We are collecting factual information from the experience of various individuals, decision-makers, or people who are in the process of responding to earthquakes, particularly assisting in the recovery. And we're looking at the decision process and how — particularly from your perspective, how one engineer might decide what level of safety is appropriate for whatever it might be, whether it be before the earthquake in judging a building, then after the earthquake, looking back at that same building or other classes of buildings, during a short-period recovery when people need to remove essential materials and so forth, and then, in hindsight, a little bit longer after that, in taking a look at the value judgments that may have been made prior to the earthquake, and seeing if we need to make some corrections and adjustments on what level of risk we were willing to take before the event and then after the event, what seems to be an appropriate level of risk to take.

So if you could kind of cover some of those things —

MR. NELSON: Do I have to memorize all those questions?

(Laughter)

CHAIRMAN CLUFF: No. Well, they all flow logically, one into another. You, as a structural engineer, think like that all the time, so —

MR. NELSON: I got involved in the seismic event that ocurred up here the day after. I'm an Office of Emergency Services volunteer, through the Structural Engineers Association of Southern California. We came up when the first group that came up out of Los Alamitos — there was about 80 of us, volunteer engineers, and some people from some of the local communities, agencies down in Southern California, quite a contingency from the City of Los Angeles.

Our first efforts were to go through and do the rapid response evaluation that's a combination of the OES efforts and the ATC documents, trying to evaluate the buildings for those that were totally unsafe, which were red-tagged; those that would require limited entry, in other words, they needed further engineering evaluation before a real determination could be made as to the status of the building; and those buildings that appeared safe for occupancy.

In the course of leading the team that was reviewing the Pacific Garden Mall, which was primarily where my activities took place, and working with the representatives from the City, we expanded the questions to encompass much along the lines of what you are asking.

We came back and tried to generate, in a form that was readily usable by the City, those buildings that had collapsed to a point where there was nothing to do but demolish them, those buildings that looked like they were damaged to such an extent that a sincere evaluation from an economic and an engineering standpoint would have to be done prior to determining whether they would be saved or demolished, those buildings that required further engineering evaluation for repair and strngthening, those buildings that were either a danger to adjacent buildings or to the public access around them.

And we went back and tried to register those buildings for content accessibility, those where you could go directly in for contents for a limited time basis, those that would require some type of shoring or clean-up before there was any access, and then again, those buildings that appeared safe for occupancy.

Once having done that, and gone back to Southern California, and then spent so little time in San Francisco, the City asked if they couldn't get some people back up here to help those efforts to an extended nature as they went through and tried to work with the rest of the buildings that are in the Mall. And myself and another structural engineer, Jerry Lehmer, from Southern California, have been sharing that responsibility back and forth.

As far as the status of documents for the safety of the buildings prior to a seismic event, I think that you are supporting a document right now, or working on the UBC, which combines two codes, the Division 88 from the City of Los Angeles, and the ABK methodology from the RGA in the City of Los Angeles, that are primarily for reducing the seismic hazard in unreinforced buildings. And the primary damage that ocurred in the Mall area were unreinforced buildings.

We are working currently with the City officials to try and get something in place for the City so that the engineers and the community will have guidelines for repair and strengthening those buildings that are remaining in the City.

The questions, I think, were just answered with that rhetoric, I would ad lib.

CHAIRMAN CLUFF: Let me — if you're available for questions — let me follow on that very point.

When I was here in Santa Cruz a few days after the event, a fellow accompanied me in walking through that Mall area, and gave me what he said were facts in terms of the city spending quite a bit of money on upgrading that Mall area, but that the seismic retrofit was so expensive, they chose not to spend money on that.

I wondered if you could shed some light on if, in fact, that is true, and if it isn't, what is the truth? And what's the process that one goes through?

MR. NELSON: You'd have to go to one of those high hills to ask somebody, "What is the truth?," up in the Himalayas or something.

I'm just a temporary consultant for the City. So, previous decisions that were made by the City regarding the economics of upgrading any of the buildings in the area, I'm not familiar with.

It is true for what we went in and saw there were efforts to seismically strngthen some of the buildings. There were a lot of facial work done to the buildings, architectural work. I don't know if those were at the City's insistence or at the owners' own, individual choosing.

I know some of the seismic retrofitting designs that were put in place were not anywhere near what you would be required to do with a Division 88 or the ABK methodology, and some of them just didn't work. They are both viable, well-tested methods of reinforcing those unreinforced buildings, at least in regards to safety hazards, risk to life.

But on the other item, sir, I'm not familiar with that.

CHAIRMAN CLUFF: So, with regard to you looking at what happened after the event, your judgment, having that knowledge, is that was the risk that we should have been unwilling to accept?

MR. NELSON: On the unreinforced brick buildings?

CHAIRMAN CLUFF: Yes. Right.

MR. NELSON: I think the unreinforced brick buildings have been recognized as a hazard to life, safety, property, for some time. I think community by community, across the state, they are trying to adopt something similar to that as it goes right now.

CHAIRMAN CLUFF: Well, yes, and so what one could say is, since we all have known for decades that these kinds of buildings collapse in earthquakes, that the process that we've had in place, the efforts that this Commission has done and the local communities, that that process has resulted in acceptance of a risk that has been made. Whether or not it was that conscious or not is another thing. But, nevertheless, that's what one could say. That level of risk has been acceptable.

Should we continue in that direction?

MR. NELSON: Well, who's accepted the level of risk in your statement, and who is "we" when we say we should continue to accept it?

CHAIRMAN CLUFF: Oh, I'm just —

MR. NELSON: You're — the question is — I'm not trying to debate it —

CHAIRMAN CLUFF: Sure.

MR. NELSON: — I'm just trying to get an answer that really addresses the problem.

You have a whole community that has accepted the responsibility. The owners that bicker about the financing to do this, and all of the community that has to go through the political efforts and the internal efforts to get something like that in place, they all need to work together, hand in hand, to come up with something that would be acceptable.

The examples that have taken place from prior events in Long Beach some time ago, and then in Los Angeles with what they've just adopted, are examples of the two communities working together, not always hand in hand, but working together with the building owners and contractors and everybody else in the city.

Did that answer your question?

CHAIRMAN CLUFF: Well, it — partly. It's a social issue that we've been through; every hearing we've had, we've repeated this. I'm just trying to get some more documentation on our record in that there are a lot of competing needs for a community, whether it be Santa Cruz, San Francisco, Los Angeles, or whatever. And so far, we as a community haven't been able to take the giant step that we need to improve seismic safety.

And the point I was making was, in one way that's a — that looks like a judgment on it, that we're willing to accept it. I personally don't think we should, but there are a lot of competing needs for resources. And if we don't take some giant steps now, when will we take those giant steps?

MR. NELSON: One of the discussions that I've had with some of the people here in the City goes back to the funding of any repairs that would be, in essence, mandated by citations from having in place something like the Division 88, which they did in the City of Los Angeles. What you're doing is basically telling the owner that he has to find funding to make these types of repairs, and they're giving them extended time periods in order to which to respond to those repairs.

If there are other bodies that can help make funds available for those, that might go hand in hand with speeding that process up.

CHAIRMAN CLUFF: Further questions? Stan?

COMMISSIONER SCOTT: Yes. I'm just wondering if we will, in due course, be able to get some fairly definite information about the nature of those efforts to do some seismic strengthening that, in retrospect, clearly proved inadequate. Maybe that's going to kind of help tell us something or reinforce something that maybe we should have known before.

MR. NELSON: Well, those efforts that were done here in the community?

COMMISSIONER SCOTT: Yes.

MR. NELSON: They were done on a basis where they didn't have full knowledge of the state of the art that was available, which is not uncommon. It's a smaller community and doesn't have all of the documents that would have been processed and used in an area like Los Angeles.

COMMISSIONER SCOTT: Um-hmm. No, I understand that. I'm just asking if we will be able to get information on what was done, on what was the nature of it. See, you could figure out, you know —

MR. NELSON: There was one building that it looked like specific ties had been installed to try and anchor the building to the adjacent masonry wall. They were leaded sleeve anchors, which today we know don't hold. I don't know at what time they were installed, but we know today that they are ineffective. It must have been some years ago that they were put in, obviously.

There were some other buildings where some through-anchors were put into place. They seem to have worked well. There were still some parts of the building that came out. There were other buildings where the owner did not understand what a retrofit was. They had told me the building had been retrofitted, and they had done a lot of nice tinted improvement work on the inside, a lot of pretty walls and plaster, but nothing to attach the floor or diaphragm to the exterior wall.

COMMISSIONER SCOTT: I'm just thinking that, in due course, it would be helpful to get this kind of information on a consistent and ongoing basis so we can figure out, you know, what did happen.

MR. NELSON: You have on file a lot of good response to the buildings that had been seismically strengthened from the Whittier event. There were a number of buildings in that area, and I'm sure you've talked to people about that already.

COMMISSIONER SCOTT: Yeah.

MR. NELSON: They have a good record of what went on in those buildings, those things that did work. And they have since, if you're not aware of, adjusted their Division 88 document. They are just now rewording that to take care of some of the things that they realized were slightly different than they had assumed.

COMMISSIONER SCOTT: Statewide, it's maybe almost as important to know what doesn't work as what does work. That's partly my point.

MR. NELSON: I agree. Statewide, it's almost like days when there was a North and a South. I'm sure that might be a surprise to some, but not to others.

And that effort to make that communication come to a head, where we can actually get some things done is ongoing, both in the Structural Engineers Association, which is one of the groups that tries to lead in these efforts, and next year we hope to do some more things.

Effectively, it will be the first time that two close friends are the president of each of the two sections. I'll be the president of the southern section and a good friend of mine will be the president of the northern section. So, at least we know we'll be talking to each other.

CHAIRMAN CLUFF: Further questions? Keith?

COMMISSIONER UMEMOTO: Did you have any assessment on the potential for anchor-bolting on a lot of the single-family dwellings that didn't hold up?

MR. NELSON: I did not get to see a whole lot of the damage due to lack of anchor bolts or due to the raised floors with no shear considerations for tying from the sill plate down to the foundation. I saw some evidence of slight movement.

Some of the other groups that were here that actually got to go out in the residential community got to see some of the classes and failures. I did not have any firsthand knowledge of that, or see any. There was a number of people that did see some, though, and they did move.

And again, some of the things that you had looked for that repeatedly helped buildings stand up were confirmed. The amount of interior partitions, even though they be the old lath and plaster, or some of the masonry walls, bearing masonry walls that actually collapsed, the buildings remained erect at least for some degree of safety, because the walls fell out into the adjacent building. So, those with a lot of interior partitions, the roof and some of the floors remained standing.

CHAIRMAN CLUFF: Thank you very much. We appreciate your coming at a moment's notice to share your experience with us.

MR. NELSON: Sorry I didn't have any — I've got a lot of pictures, but no slides.

CHAIRMAN CLUFF: That's okay.

I'd like to now move to Gary Griggs. I think I saw him come in. Yes, Gary, come on up to the microphone.

Gary is also at UC Santa Cruz in the Earth Sciences Geology Department. Gary has a lot of firsthand knowledge of faults and geologic conditions in this part of California.

We are here to talk about more than just scientific things, but also practical things that we as a Commission can understand and work together to improve seismic safety. So, please keep your remarks in that direction. Thank you.

PROFESSOR GRIGGS: Okay. Let me just say briefly, as an introduction, that I've been working on geologic hazards in Santa Cruz County for the last 20 years. 15 of those has been spent as a consultant and advisor to the Santa Cruz Planning Department. So, I've been involved not only in looking at these problems from what one might say an academic point of view, but also trying to look at what the implications are for land use planning.

And my thought here this afternoon is really to show you what we've seen in the last two or three weeks, from the geological perspective, really as an engineering geologist, also as someone who has built three homes, and looking carefully at some of the ways in which homes held up and did not hold up in particular geologic environments.

And I just want to look at three basic responses: seismic shaking, slope failure or ground failure, and also fault rupture or surface offset. So I'm going to just go through a number of slides here pretty quickly with a view towards showing you what some of the areas of the county which are not easily accessible contain. And just quickly to show you 1906 in Santa Cruz —

(The following remarks were accompanied
by a slide presentation.)

PROFESSOR GRIGGS: In reading through the 1906 accounts, it turns out I think there were some real parallels to what happened in 1906 in Santa Cruz County and what happened in this earthquake. A large earthquake at that time, further away — and Cooper House, downtown, was one of the examples of a failure in 1906, as were many of the other old buildings downtown, which I don't really want to focus on, except to say they really fared better in 1906, I think — now they're 80 years older and they've had a lot of wear and tear, and the mortar's not what it used to be, and so forth. So, these have been widely publicized, and I think this is an expected response.

I was asked to talk about maybe some of the things that we could have predicted and some that we weren't so certain about. I would have said that some of these buildings downtown, because of the environment they were in, the kinds of buildings probably responded as we might have expected. Probably the most widespread phenomenon that's affected most people has been chimney collapse. And that, again, parallels 1906.

The roofline failure is most common, and then larger-scale failure which is widespread. Although focussed in certain areas, I don't think there's anyplace in the county where this did not occur.

Some of the older buildings, you know, partially failed and were, I guess we might say, in expected ways, connections between various members and so forth — this seemed to be extremely common — older, elevated structures with cripple walls that did not have adequate shear bracing — I'm sure you've seen many of these that actually went the extra step and came down — and elvated structures in the mountain areas with, in this case, heavy tile roof, which did not fare well.

This was actually a house up in the zone that has been identified as that of the most intense damage. This was actually an older house that had been reconstructed, but I think they — you know, they failed to take into account some basic structural engineering in the designing system and a real lack of shear bracing on those lower walls.

One of the things that we've noticed in this quake, which, as I read through the literature, I find has not been documented to any great sense, is this phenomenon of ridgetop fracturing, fissuring. And the seismologists are now setting out portable seismographs to look at the site response, but this seemed to have been the phenomenon that created the most structural damage throughout the county.

This is an example of this ridgetop fracturing on a modest scale. Some of these zones are 100 feet wide, with individual fractures and fissures of 6 to 8 feet deep, extending along the hill slopes for, say, 1,000 feet, which initially we thought to be, in fact, traces of some of the fault zones. And the more we looked, the more we realized these were ridgetop-concentrated, particularly on very steep ridgetops.

So there's some real seismic amplification which at least I have not seen in the geological literature in the past. This is one of the few places where one of these series of ridgetop fissures actually crosses a road cut. And if you look carefully — although I don't have a pointer here, I don't believe — at the top, there are actually about three locations where those fissures come down through the soil overburden into the bedrock.

And I think it's extremely important at this point to discover just what the extent of that fracturing process has been. It seems intuitive that if it, in fact, extended into the bedrock, and we'd fracture these ridge crests, and this was a common process, before long the ridge crest shouldn't be there any more. We've broken them up. They're going to be more easily eroded. They shouldn't stand out.

So, the questions are, do these fractures now open up? Some of these have created head scarps of land slides; others, we are totally uncertain of what's going to happen next to these open fractures and fissures. So, it's presented a new problem that we hadn't been previously aware of. In fact, I think most of us, as geologists, would have said the ridgetops were the stable, best foundation conditions for houses. In fact, in this earthquake, they turned out to be some of the worst.

This is one of these ridgetop fractures, actually beneath the asphalt, or beneath the cement of a driveway. And you can see the shaking at this particular site and the effect on the lower member of this house.

This is the front of that same house with the large, open wall that was, you know, literally blown out. The next series of slides are all ridgetop locations. And many of these homes are not older homes, are very new, that I would say probably were built according to the UBC. This was a common problem with a double garage underneath, without adequate shear wall to support it and, again, a tile roof. So, the overstory completely collapsed, as we saw in San Fernando.

This is the same example — another example of the same problem, where there's a structure above the garage and that open wall collapsed, again on a ridgetop.

Another ridgetop location where — someone asked about the sill and the attachment — this is a single-story structure, yet the entire house was moved, along with the mud sill, completely off the foundation, five or six feet in this case. This is a side view of that same house, again on one of these relatively narrow ridgetop locations.

Another one on the ridgetop had the plywood and everything that looked like it was done correctly, and again, the whole structure was pulled, in this case, off of the mud sill.

Another one where the house stayed intact, again on a narrow ridgetop, completely off the foundation. And this is characteristic of, I think, the problem. Along the right side of the foundation, you can see one of these fissures running through the ridge. This house had been completed within the last two years. The house was two-story, virtually intact. The foundation was intact, but the house was just thrown three feet off the foundation. And what it tells me is that what is required for attachment of the sill and the plates and the walls to the foundation simply is inadequate for these kinds of forces.

This is a little bit hard to figure out, but it's actually a garage — plywood-sheeted garage — on poles, and it kind of looks like a hat now, that fell over the pilings, again, on a ridgetop location.

This was common, again on a ridgetop, where — and I think this was probably an illegal remodel — where 3/8 —it looks like 3/8-inch plywood was used on the cripple walls and that was stapled to the 2-by-6's. It's hard to say anything about this one.

And another situation, which I previously thought, not again as a structural engineer, but as someone who's built a couple of homes, that pilings might have been a reasonable response as a way to deal with these kinds of sites — there were some problems with the way the pilings were put in, but what we noticed under the structure was 2-by-6's had been bolted through these pilings, and because of the number of bolts and the diameter of these bolts in these narrow-diametered, dry, fir pilings, the pilings just literally split.

Karen may have mentioned something about the acceleration. This was an instance, again on a ridgetop, where an individual standing in front of his house and deck and noticed his truck actually jump over this brick wall. So, we have at least three instances of personal observations of watching things leave the ground and come down in a separate location. So, I think that's probably consistent with what we see now in early earthquakes of this particular magnitude.

Liquefaction is the other process that was common in certain parts of the county. This is Watsonville, again in 1906. Virtually the same kinds of things were seen in Watsonville, Moss Landing, and down around the San Lorenzo River mouth in this earthquake.

This is the county liquefaction potential map, part of the seismic element dating back to '75. And I think it probably is a good representation of what could be expected. This was the levee area, down along the lower San Lorenzo, which is now being repaired. So we have the maps. I think we have the knowledge of the high potentials, but it's not something we've really done anything about.

Slope failure or ground failure, this was, again, 1906 in the Santa Cruz Mountains, a large landslide. And as you know, the difference in 1906 and this event, in terms of climate, was that this occurred at about the driest possible time, and that earthquake occurred after a very wet April, so we had more large-scale slides and slumps in that event. In this event, we seem to see more rock failures — this was the 17 failure, where usually joint-bounded blocks within the tertiary sediments were the ones that failed.

This is Old San Jose Road, which was the next access after 17. You can see the same kinds of blocks and these joint patterns in the rocks, which were the failure surfaces.

Fill failure was extremely common in the mountain roads on a very large scale. The other thing we noticed in flying the coast a week ago was the extent of bluff failure, which, as coastal geologists, a lot of us have looked at this relative to marine processes, and always kind of wondered about the impact of seismic shaking on these coastal bluffs. I was, in fact, surprised to see this extended clear up to Daly City-Pacifica on a large scale, principally in the less consolidated, more recent material. This is Bonny Doon Beach, where a person was buried, one of the six deaths in Santa Cruz County, where the mudstone, which is a much tougher rock, but highly fractured, actually collapsed. And as you fly down the coast, you can see these isolated spots where small areas of mudstone and sandstone have failed — also the terrace deposits.

But when you get into the bay, you see on a different scale where homes have been constructed, both on the bluff edge and also on the beach below the bluff. So, in this case, there's threats to both types of property. Fortunately in this case, the material in the terrace deposits and the bedrock is loose enough that it disaggregated and came down as kind of a sand flow rather than as large, detached blocks, so that these houses were threatened and have been posted in some cases. But there was no real, significant structural damage.

This is the Aptos Seascape area where — no development at the base of the bluff, in this case, but problems losing a thin slab at the top of the bluff, and that began to create some problems for the homeowners who have encroached on the bluff top. Place De Mer, which is more into the middle of the bay, had some of the largest- scale failure. And, again, the bluff edge came back.

It's interesting. We have aerial photographs here, going back to 1928, which look very, very similar to the present pattern. I think what we see here is, we don't see large, arcuate failures that step 50 feet back into the bluff, but I think we see this surface kind of sloughing — sloughing on a large scale during earthquakes, which has probably been the dominant kind of process.

The other that has concerned us considerably has been what we feel reactivation of what we call these large, ancient, slide masses, and ancient because their geomorph is subdued — lot's of big, old, stable-looking redwood trees growing on them, and I think we're re-evaluating what "ancient" means after this event.

So, this is the head scarp of one of these large slides up in the Villa Del Monte area. This is the other side of it, maybe 200 or 300 yards across.

Turning around, this is some of these head scarps beginning to work their way into this residential area. And here's a helicoptor view. You can see the slide scarps in the lower right, cutting across a tennis court and then across the hill slope on the road. This particular area involves several hundred acres, and probably a hundred parcels of expensive homes that were built on this, quote, "ancient" slide.

And our next questioin is, what happens now, with winter rains, and are these going to be reactivated? And there's some major concerns about how do we assess stability of these, quote, "old" or "ancient" slide masses, and under what conditions should we expect those to be reactivated? And as it's started to rain, these cracks are open, and we're starting to see the water running into these, which is obviously going to accelerate the process by which water enters these slide surfaces.

The last process is surface rupture, and I think that it was well publicized that — this was 1906 up on the summit, the Morrell House, which sat astride the fault. In this earthquake, I think it was of interest to a lot of people that unequivocal surface rupture has not really been documented to everyone's satisfaction. Looking at the way in which the earthquake occurred, the thrust nature of it, perhaps, and the progression kind of up-dip of the focal point, and so forth, maybe that's not surprising.

This is one site near the summit that has been thought, initially, to be a zone of surface rupture related to the fault. It looks like it has left-lateral offsetting in one place instead of right-lateral. It may be one of these ridgetop fractures instead.

This is another one of these ruptures, right along the summit, which has a little bit of right-lateral. And it may be a graben — one side of a graben that's formed along the crest — and another location where you can actually see, you know, half-a-dozen inches of right-lateral offset. There's no one location where we've noticed a good meter, meter-and-a-half, horizontal offset, as we might have expected.

Wew have a quandary in the Santa Cruz Mountains. This is a clear picture of the fault on the Carrizo Plain, and this is more typical of the Santa Cruz Mountain section behind Watsonville, where landsliding and slope failure seem to be as perhaps as large a problem as actual surface rupture. It's hard to find a single trace.

We've invested a lot of effort in trenching in Santa Cruz County, trying to find or locate the trace on parcels that are being proposed for development. I think this event and the kind of failures that occur give us some pause to consider whether, in fact, that's been always justified, or whether, in fact, there are other hazards, this ridgetop fracturing process, as well as these slope failures, that may in fact be more significant over the long run and need equal or greater attention.

The other thing that I think is important as we look at this fault running through the Santa Cruz Mountains is the obvious bend in it that some of us have recognized for years, the restraining nature of that bend, and the fact that if you look at the nature of the movement, it was both right-lateral and thrust, which led to, perhaps, some of the amplification we've seen.

In fact, it also gives us, I think, a new look at some of the subsidiary faults. And, in fact, if you look at the main shock and put that epicenter on the surface, it falls over the Zayante Fault, which has always been thought of in very unclear terms in terms of its potential for surface rupture. And if you look at that cross-section, you see there's a dipping zone, which has been, I guess, known about for years, but perhaps not completely appreciated.

So, let me just leave you with those geological observations, and I'd be glad to answer any questions if you have them.

Thank you.

CHAIRMAN CLUFF: Thank you, Gary. We appreciate that wonderful set of slides, and if there's any way that we could get the better ones of those for our record, we would certainly appreciate some hard copies of those for our public record.

PROFESSOR GRIGGS: Fine.

CHAIRMAN CLUFF: As well as a copy of those slides, they're very useful — knowing your expertise and you're living in this area, that's a valuable documentation that we all need to have.

I want to focus some attention on these ridgetop fractures, and ask you, are you or others documenting the exact location and getting as much scientific evidence as we, can prior to the heavy rains and times when landsliding and erosion may obliterate the evidence that isn't going to last very long?

PROFESSOR GRIGGS: Well, we began initially, the first morning, on a volunteer effort, really getting out to map what we could. And it took actually, I think, a week to two before there was a real official kind of response from state and federal agencies.

So, looking at the size of the county and the ruralness of its landscape, a lot of these sites are difficult to get to and it takes a lot of field time. So, we kind of took a first cut at all this, tried to document what we could. I think the effort has now, in the last two weeks, has been much more intensive with USGS and CDMG involved.

And right now, there's — it looks like a real strong possibility of a fair amount of money coming in — FEMA money coming in, through the Corps, to do this kind of thorough, geological field investigation that really falls in nobody's lap, as a rsponsibility.

But you're completely right. Most people have asphalted over their roads and are filling in cracks as quickly as they can. So, we're thinking about the mapping project, which has been underway, some subsurface investigations to try to really document how extensive these features are, and what kind of long-term implications that has for ridgetop stability, and so forth.

CHAIRMAN CLUFF: Yes. It's something that I personally have observed in many earthquakes. And San Fernando was a classic case, but in that case, no one went out and gathered the data that we needed. Had we done that, we might have understood these more.

For the benefit of the Commission members who aren't geologists, the Germans have a word for part of this process that might fit in. It's called the "sakun" feature. I've seen these in the Alps, in South America, and Alaska, and in the Pacific Northwest, and I think there may be — Dorothy Radbruch did a research on sakun features that are more prevalent in seismic regions.

And there might be some things that would be helpful if you were to look at a — I think she wrote two or three professional papers on places that I'd helped focus her attention, in Alaska, South America, and Europe. And I think there might be some geodetic association there that might be helpful.

And I would hope we could gather some valuable information, because if what is strongly suggested in these slides, that there are places where you get in excess of one g of acceleration, we ought ot try and understand that and note that in our future planning, because it's an area where avoidance is probably better than trying to accommodate those forces.

I don't want to make any final judgments about that now, but it certainly — I would encourage you, and I would hope that someone has taken low-altitude, aerial photographs to try to preserve it, and if they haven't, maybe there's some way we could nudge someone to do that.

PROFESSOR GRIGGS: One of the real difficulties in the Santa Cruz Mountains is because of the tree cover.

CHAIRMAN CLUFF: Yeah, right.

PROFESSOR GRIGGS: It's real hard from the air, and you know, the helicopter's been going around for a month now, I'm not sure how much those flights have really shown us —

CHAIRMAN CLUFF: Yeah.

PROFESSOR GRIGGS: — about the mountain areas.

CHAIRMAN CLUFF: I can speak from personal experience. Tom was with me one day. The morning after the earthquake, I was over these areas in a helicopter, 50 feet off the ground, and it was very frustrating to see the vegetation hiding almost — I'd see a crack here and there, and didn't have time to land or get on the ground, but it is, nevertheless — I think it is a relatively high priority item for the engineering geologist community to try to document this so we can learn from it, and, hopefully, apply this to other places.

And it's kind of a new phenomenon that we haven't spent enough time on. I think it's worth some effort.

PROFESSOR GRIGGS: Well, this is a particularly appropriate recommendation because there's an advisory committee meeting tonight to kind of set the stage for what goes forward from this point on, with this federal money, so I appreciate that.

CHAIRMAN CLUFF: Good.

Further questions? Bill?

COMMISSIONER WASTE: I'll ask this question as a layman, but it occurs to me after listening to some of the testimony and during some reading on the subject,

soil type, obviously, has an awful lot to do with what we observed in San Francisco, and the location of the more serious damage that we saw here. And this is a philosophical question, but nonetheless, I think it's one that we need to address. Are there, perhaps, certain areas where the soil types are such that we shouldn't build there?

CHAIRMAN CLUFF: Gary, he's asking you the question.

PROFESSOR GRIGGS: Yeah, right. I saw him look in your direction, Lloyd.

(Laughter)

COMMISSIONER WASTE: I'll look at both of you.

PROFESSOR GRIGGS: Yeah.

I mean, my, you know, view has always been, you know, it's a combination of distance to the epicenter, subsurface amterial, and building construction type. And, you know, we had some buildings that did fine on the worst kinds of materials, and others that seemed to have done well — I mean that didn't seem to have done very well, on very thin soils on top of bedrock.

So, I'd have a hard time — certainly the liquefaction potential is one area, in terms of having an understanding of what kind of response to expect, but the work so far done by the USGS with their portable seismic arrays has shown some very strong local topographic control on these ground effects, within, you know, hundreds of yards, just of the topography and the particular bedrock underneath.

So, I think that's just one of several things we need to keep looking at. But I guess I'd be hard-pressed at this point to pick a soil type we could totally avoid, knowing just the nuts and bolts of how land use and prices go in California.

CHAIRMAN CLUFF: Yeah. Bill, let me give you my response to that. It depends. Most soil failure, we can understand, and often, if one wants to put enough money into it, provide engineering measures that can correct the situation, either removing it or putting in foundations that can accommodate the soil failure.

Now, that's not true for some of these ancient landslides that Gary mentioned. I mean, that's an issue that's been with us for decades that we've all wrestled with and wondered, "Are these huge monsters now stable?" Maybe in a big earthquake, with the wet season, they would become unstable. And I think we've got another insight on that here. We'd better worry about them more than we did, so those kinds of cases are probably avoided, or minimal development, you know, a few houses, so you're not really wrecking a whole community.

But the liquefaction zone, say, up in the Marina District, that's a problem that can be solved with engineering techniques.

The liquefaction like in Anchorage, Alaska, where you had a big lateral spreading on a free face out in Cook Inlet, now that's — that's another situation that costs a lot of money to — so, maybe there's a tradeoff with avoidance.

So, there are solutions. They're all very expensive. And in some cases, it might be better to avoid some of these areas. And it's not easy.

Further questions of Gary from the — Yes, Pat?

COMMISSIONER SNYDER: Yes. Gary, in your observation of these different types of buildings, different construction, was there any impression that you might have on the issue of public safety, what we're telling people to do in the event of an earthquake? In viewing some of your slides, I think another county was the right place to be, to be safe. But, in general, are there any messages we should change, or any that are validated?

PROFESSOR GRIGGS: Well, I think, maybe to your credit, it's extremely impressive to me that nobody died in a single-family dwelling in this earthquake. Despite some of the pictures — and they could have — nobody did, which tells me that we're doing something right.

On the other hand, there was — the old buildings, it seems like were in a bit of a bind. The newer buildings, from my understanding of the code and what is and isn't required, a number of these structures that were built within the last five years were built to the code, but simply don't have the tie-downs and some of the other real basics, which, for a few dollars, would have made, I think, the difference between a structure going through the quake okay and not.

So, I think there's some — I don't know — I mean, what I'm proposing, at least, is a careful look at the UBC in those kinds of areas and some — not to make it any longer than it is, but a few simple things, I think, would have made a big difference in

— although I also saw a house where the seismic strap ripped clear out of the foundation, although this one where it was framed and had the roof on, but it didn't have any of the shear on the wall yet. So, while it really wasn't a good test, in the sense that the house hadn't been completed, but for the most part, I think that tie would have made a major difference in a lot of these structures, that and the cripple wall sheathing.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Well, thank you very much, Gary.

We're going to deviate a little bit here from our agenda.

Dick Little, emergency broadcast station, we'd like you to come up to the table, and KTOM — talk to us about your experience in terms of what might be useful to the Seismic Safety Commission in terms of communication and whatever else, in terms of what worked, what didn't work, and what we can do to improve it.

MR. LITTLE: Thank you very much.

I'm rather awestruck by the distinguished list of people you have testifying before you. And to see myself testifying after such notables as Gary Griggs and Karen McNalley makes me feel like the world is a tuxedo and I'm a pair of brown shoes.

(Laughter)

MR. LITTLE: However, my role in all this is certainly significantly different from theirs, and the communications aspect of Santa Cruz County probably worked better here than at any spot in the area that was affected by the earthquake. I have been informed that the Bay Area was, as far as communications is concerned, an absolute disaster area unto itself, because people simply weren't getting information from their emergency broadcast centers or their EBS systems, and they were not working the way they were supposed to, for a variety of reasons.

In Santa Cruz County, however, we sputtered a little bit before we got underway, but we did indeed get underway. Much of the credit goes to Nancy Gordon, who was working in the basement of the government center, and who arrived down there and put things in shipshape and had that operation humming.

When I first arrived — well, after the quake — and I was at home at the time, like so many people, getting ready to watch the World Series — and after the quake hit and I surveyed the damage to my house, and I was very, very fortunate there was very little, so I went down to at least kick off the EBS system, since I was familiar with it.

I'm probably one of the rare people that's ever had to go through two major disasters in a single decade. Usually these things happen once in a lifetime. And, unfortunately, people now only look forward to hearing from me when there's a disaster, which is something I guess — a cross I'll have to bear for the rest of my life.

But, the long and the short of it was that I no longer work for KSCO, which is the EBS station for this area. I now work for KTOM. But because of the disaster, I thought I would at least go down there, and if nothing else, get that operation underway for them. At the invitation of Sheriff Al Noran, I entered the building and was in the process of establishing a link between the center and the radio station, and that was probably within twenty minutes of the quake, and I was ordered out of the building by the administrative officer, through the fire marshal, Mel Angel, for what reason, I don't know. I was just simply ordered out, and he — when the sheriff said, "I need him to put some information out," Angel said, "I will take care of that," and ordered me out again.

So, I'm not one to fool around — I can take a hint — and I left. I went to the City of Scotts Valley and was conducting press relations and coordinating volunteers for them, when they called from the radio station and asked that I go back down there and estabish the EBS link-up. And that was at seven o'clock. And from that point forward, it started working well, and I think that KSCO did an admirable job of putting all that together, largely because of the work of a couple of gentlemen, whose names I'd like to give to the Commission as people who were truly outstanding in all of this, in terms of delivering information.

And one of them was Bill Brooks, and the other one was Don Husing, both of whom had gone through the flood of '82, when EBS was a major instrument of communication during that time as well.

So, the three of us were, unfortunately, united in all of this, and fortunate, I guess, in another way, and were able, I think, to do a pretty fair job of informing the public as to what the situation should be in terms of getting information out during an earthquake.

I think it's very, very difficult for government officials, particularly those who work in an emergency center, where they have all the electricity they need and all the lighting they need and all the telephones they need, to understand what it's like being out in the general public, particularly if you're older, and you have no telephone, and you have no electricity, and your TV is gone, and the only communication you have is the little battery-operated box called a radio.

And I have come to realize, after going through two of these things, that communication ranks up there with getting ambulances out, getting emergency people to the scene, and getting, in the case of flood, sandbags out — those kinds of very, very important things. But the communication of public officials to their constituencies ranks right up there with that. I never realized that until I went through the storm of '82. We all like to think what we do is important, but never in my wildest imagination did I realize how important communication is when there is no other means of communication except radio.

Once you get electricity back on, then television starts taking a major role. But until that electricity is there, most people don't have battery-operated TV's. Radio is it, and it becomes a very vital link with the general public, in terms of trying to tell them what happened, where it happened, and how they can find the appropriate facilities to take care of themselves, at least on an interim basis, where the shelters are, and this kind of information, which is so vitally important.

And just as important is the fact that their officials, whether they're appointed or elected, the people who are in charge talk to the people, because it's so important psychologically for the public out there to understand that there are people in a given position who are in authority, who are making sure that they are getting facilities and they are being well taken care of.

So, along — I have come to realize that, after going through two of these things. In 1982, the flood, and the landslides that came along with the heavy rainpour — rainfall that we had, tore out electricity in this community for about three or four days. And telephone communications were gone to a major segment of the community because a bridge went down with all the telephone lines in it, and it really tore up Ma Bell pretty good. And so, radio became the vital link there.

I have concluded, after going through much of this, that, in effect, you have radio being a media or a tool of information. It is an educator, it is not a news vehicle. News becomes not very essential when you're — when you're in the EBS mode and you're trying to get out information about — about various important things that the public needs to know. Battles between public officials and these other kinds of things, which normally do make news, become incidental to the more important aspects of telling people where shelter is, what roads are open, what bridges are out, et cetera.

I have also concluded that the — and a lot of my colleagues have concluded that it has now become unrealistic to assume that a given radio station should be the EBS station and be the station to send out the communications. This dates back to the time of Conorad — you may remember, some of you who are older, the slogan "640 1240 Conorad," where they bounced you around the dial and this kind of thing, and that evolved into the current EBS system, which is based primarily on a nuclear attack on this country, where you have a flagship station — in our case, it's KNBR in San Francisco, and then it, of course, moves down to KSCO, and the backup stations, and this kind of thing.

And the reality of EBS broadcasting is, one, it's extremely localized. Your station primarily deals with a local and very miniscule area in most disasters, comparatively speaking. Monterey County had very little damage compared to what Santa Cruz went through. Their operation over there did not have nearly the need for information that ours did. They had electricity back on relatively soon, and these kinds of things.

But even in the case of Watsonville, for instance, which is a small community — for those of you not familiar with it — on the southern end of our county. It has a radio station down there, and means should be made available for that radio station to have communications with a center, a small center, that the City of Watsonville may have to set up, in the event of an emergency that may be localized to their area.

We fired up the EBS station once in between these two disasters, '82 and '89, with the Lexington fire a couple of years ago, but we opened it and shut it down fairly quickly. There was no need to be continuously broadcasting, as there was between '82 and 1989.

So, the irony of all of this is that I have prepared a new plan for the emergency broadcast system to be utilized that I think is more localized and seems to make a lot more sense, and deals primarily with today's technology, over what was once thought to be the appropriate way to go, with the threat of nuclear attack and these kinds of things — not that that, obviously, is downgraded in importance, but the reality is, the EBS station is going to be used primarily for localized emergencies. The EBS system will be used for localized emergencies, such as an earthquake, and let's hope that it never is needed for a nuclear attack of any kind.

The plan basically calls for a single EBS center in the county government centers of both Monterey and Santa Cruz Counties — and this plan is being drawn up for this region, but I'm sure it can be adapted to any region — and the — each center would be equipped with communications equipment, with each fire district and each city within the boundaries of the county. And the reason for that is because small jurisdictions simply do not have the ability to get information out to their individual constituencies. And a lot of that is very important to those constituencies and to the people responsible.

So, we would have subcommunications between the EBS centers, which, under the proposed plan, would be operated not by the government, but by the media itself, through a pool of people who would be schooled and trained in the development of disasters. It suggests that a specific code and education plan be given to people to study as to their appropriate roles and the kinds of things they should, you know, take care of. They should get less in a news mode, for instance, and more into an information mode, and these kinds of things. These are the things that I've learned in the two I've personally been through.

I think you find a tone-actuated system out of an EBS center that every radio station would have, and therefore, if you had an earthquake of, say, 8 or above, which could tear out virtually all the radio stations in this area, save for a couple of them, like, say, in Monterey County, we could still actuate tone-controlled receiving units in those radio stations, and have them continue to broadcast emergency information to the general public.

So, you wouldn't be relying on a single station; you would be relying on all the radio stations. In effect, all stations would then become the EBS station. To me, this makes a lot more sense. To most of the people I talked to, it's going to make a lot more sense.

I think you might find the government a bit resistant to the idea of having the media, and not — and not their own officials, in charge of the EBS operations. But I venture to say that if you had a communications or a disaster of some type where you lost your CAO or your person in charge of emergency coordination, or your public works official, you wouldn't go down to the street and just say, "Hey, you, come on in and be our public works director, or our CAO, or whatever." You want the best possible, well-qualified people you can find to do this.

And I venture to say that the people in the media are the most qualified and the best trained to get information out to the general public in a way that's probably the most acceptable. And that's why this plan does propose that the media pool its resources on these special occasions. Hopefully, they'll only happen once in a lifetime, but if they happen more often, they would, hopefully, be there.

And I will say this, too, about the EBS system — and it was probably the main reason, at least from my judgment and standing out and looking at it from afar — it didn't work in the Bay Area — and that is, government is extremely sensitive to the idea of the media being near their exercises.

And I would be willing to check that — willing to bet you that if you checked on the exercises carried out by government in the Bay Area counties that utilized — got their people ready for an earthquake, and held earthquake types of disasters, set up disasters just to test their personnel and to get their people ready, you will find that the EBS system was never operated, never put into motion, and never used.

And as a result, I think it failed in this last disaster because of that. It worked here because we're a tighter-knit and we're a closer operation, and we're closer to our government, a smaller community, that kind of thing. And that's why I think ours happened to work and the rest of them didn't, that and the fact we have somebody who is really well schooled and not afraid of the media to establish it.

There seems to be a general feeling among government people that having media people around, news people, reporters, what have you, tends to intimidate them. I think that's unfortunate. They needn't feel that way. They have ham operators around; they don't seem to feel intimidated by ham operators. You have private ambulance drivers around; they don't seem to be feeling any too overdone by those people. They have private hospitals they have to work with; they seem to work with private hospitals okay. And there's no reason, no reason in the world why, that the media and government cannot work hand in hand during — certainly during a disaster situation, to make it work for the best for everybody.

So, that's essentially why I started this plan in operation. I would be glad to give this committee a copy of that plan, if they would choose to — if they would want to look at it. I think it's got some good points in it.

It also suggests that the government, when they get into a situation like this earthquake, that they literally draft a reporter out of the local pool to operate as their press liaison officer so questions can get answered in a timely — in a timely way, with proper information, and those kinds of things. And one reporter would probably have a good idea of what the rest of the press needs to know.

There was a lot of complaints made during this particular disaster that the press people simply were not fully informed. Certainly, in the early going, they were not properly — did not properly inform themselves on what needed to get answered, and the questions that needed to get answered, and those kinds of things, which made for unnecessary delays to get information out to the general public, which I don't think is good for anyone.

And I'd like to close by saying that having a properly informed public in a disaster situation, I think, would make life so much easier for your public officials, in what they have to do and the job they have to get done. I've been through two of them, as I said, and one paper even labeled me as the, quote, "official disaster broadcaster for Santa Cruz County," a moniker I don't know whether I like or not, but nevertheless, it's there. And as one who has that moniker, I can say that when you have an informed public, believe me, everything works a heck of a lot smoother, you have a lot less panic, you have a lot less interference with what must get done to make people — put people's lives back in order again.

Thank you, and I'll take any questions.

CHAIRMAN CLUFF: Thank you, Mr. Little. We want to acknowledge your fine efforts in the emergency phase, and certainly, we as a Commission have, for a long time, known of the great assistance that radio can play in emergency response and help to get the recovery on a speedy beginning.

So, let me give you a couple of observations and then ask for your comments.

With regard to your — some of your last statements you made, the news media that I experienced, the local — and I want to distinguish between the local and national or international — the local people were a lot like you, in San Francisco, Oakland, and everywhere else. They did a marvelous job. I used my radio, KCBS; within minutes after, I knew a lot about the earthquake, and so forth. So, there were a lot of radios that were on the air and doing a marvelous job.

And I didn't find them intimidating, the reporters that called me, or that we experienced in the field, and I think that was characteristic of the local — the local people — has been my experience. They were very helpful. They were all in there for the same reason, to try to solve the problem, get accurate information out to the public so that they wouldn't do some dumb things, which often happens when someone is misinformed about certain actions, and it gets out on the radio or television, and they have to undo it.

So, what I found was that — that when there was an interest from a national perspective or international, for boosting the image of a single personality, or whatever, they tend to misuse the damage information to make it look like all of Santa Cruz was flattened. I was in a helicopter the next day, and I received an emergency call: "Would I please go down to Santa Cruz" — I was near the area in the helicopter — "and verify that it still exists?" The information that was coming out was that Santa Cruz had been flattened.

And, of course, I knew that was not the case, but I did come by and verify that only a few, a small percentage, of the buildings had been affected, tragically so where they were.

But I'd like your comments in terms of how we can manage — better manage the news media, in that we need to use them. Some were fighting for position in helicopters, getting so close to downed buildings where rescue operations were going, the wash from the propellors was creating vibrations that were dangerous. And that's too bad, because then, some of us who needed to go in with a helicopter, were restricted from getting close enough to perform our function.

And I found it was more the national group, or at least my experience was, than the locals. And we need to work together in some way to improve that situation.

MR. LITTLE: Well, I'm sure you don't mean "manage" in the same way you'd normally manage a corporation or something, when you say "manage the news media." I think I understand what you're saying is to try and utilize everybody —

CHAIRMAN CLUFF: Yes.

MR. LITTLE: — so they function well together —

CHAIRMAN CLUFF: Right.

MR. LITTLE: — and get things done. And I understand that can be a very serious problem. Sometimes, in our lust to get the news, which is what the national news media does, they tend to get a bit zealous about what they try and do, and their aggressiveness in getting it tends to go overboard sometimes.

We had a situation here in Santa Cruz County in 1982 where a lot of news helicopters were flying over the San Lorenzo Valley, getting so close that rescue efforts — trees were coming down on the people doing the rescuing, trying to get those people out of there.

The sheriff threw a 1,500-foot limit on where you could fly over the valley, and he — he was very strict about upholding that, to the point where, at one point, he actually arrested Leon Panetta, along with the Channel 8 group — and he was in their helicopter, and he had them under arrest, after ordering the helicopter to land.

So, he was — he was very adamant about his feeling about that 1,500-foot limit.

I think most of the people in the local media, for, you know, whatever our faults — and I'm sure we all have them — but, I think, when it's their communities, there's a little bit more consideration, and they understand, perhaps, what is necessary to get the word out.

In radio, in these kinds of disasters, a radio becomes an instrument of education and an instrument of information. TV is an instrument primary of information and education in the early going; it evolves into a news operation. And newspapers are primarily a news operation early on, and evolve into an instrument of education and that kind of thing.

That seems to be the way the roles seem to play out, mostly because, in most major disasters, electricity is gone, and not — and very, very few people have battery-operated TV sets to utilize. So, that's why the system works the way it does.

In this particular case, of course, because of the World Series, the national attention was focused on our area anyway, and we probably had more than our share of national news media here. And so, I would imagine that probably was a major problem. And, as I said, you know, it's almost like some of these places almost have their own air forces, with all the helicopters they have. And it's something I've never experienced, because I've never worked for any organization that large.

But I remember that it has been historically a problem, particularly in our rural areas where you're trying to fly over treetops and there's a lot of trees — and as Gary Griggs said, it's difficult to spot anything from the air because of our heavy foliage and tree covering. And I think that also probably is — goes for the news media as well, because they try to get their pictures, and they have a tough time getting them because of the heavy tree foliage and what have you.

I think the only real answer is that somebody's got to tell them to stay away, at some point, when they fly like that, just to make it — make life safe for the rest of the people, because rescue efforts can be severely hampered, particularly by helicopter blades.

CHAIRMAN CLUFF: One thing that we've learned in a lot of this testimony is the value of these emergency drills, earthquake emergency response drills — "Practice, practice, practice," we've heard now. I think it was you that mentioned — I get mixed up on who has said what, but someone today, and I think it was you — that they don't involve the radio or the the news media in some of these practices. Maybe that is one, perhaps, part of the solution, in teaching them what their role is, best serving the community, and so that we have a better response and people working together rather than kind of being at odds at times.

MR. LITTLE: I think you make a very valid point there. There seems to be, because, I guess, of our day-to-day relationship, a somewhat confrontational relationship that exists between some government officials and the media. But I think government officials particularly have to learn that the media's role to some degree is confrontational, and during day-to-day operations, by necessity, you want the media to be confrontational. You don't want to just accept everybody for what they hand out to you and passively walk away. I mean, you want to question, you want to challenge, you want to ask, you want to — you want to put together — make something consistent that is — that may look indeed to be inconsistent.

But in a disaster, everybody's mindset changes, and I think that the government people have to understand that the media's mindset can be changed as their mind, hopefully, their mindsets would change as well. This has been my experience. That's the way it works here. I assume that we aren't any different, any better or any worse than anywhere else. And what you said is absolutely correct.

The EBS systems in all counties, regardless of whose plan we use, whether it's mine, the ones in existence right now, or what have you, must involve the operations of an EBS center as part of the overall plan, and the stations to take a role in that operation, because if they don't, you're going to see the same thing happen the next time there's a major earthquake in the Bay Area that's happened this time: the EBS centers were next to useless.

And while CBS and KGO and KCBS did an admirable job of covering the news, as they are paid to do and they have a staff to do, the fact is that they missed that vital link of having a key communications link-up with the various local governments throughout the Bay Area so that they can get some basic information about roads and things like that, because not even KCBS, and not even KGO, or all the king's horses and all the king's men, if you will, can just cover that whole area like a blanket.

But integrating the EBS systems of the Bay Area together, they could have made an excellent — they could do an outstanding job of covering the basic disaster areas, what's good, what isn't good, and those kinds of things, I think.

CHAIRMAN CLUFF: Effective integration sounds like one of the solutions that works.

Dan?

COMMISSIONER EBERLE: Just a point of clarification — correct me if I'm wrong — I understand that you have one primary EBS station, and get no down-link. Is that correct?

MR. LITTLE: There's a primary EBS station and there's a couple of backup stations, according to the EBS plan that currently exists. KSCO, here in town — the tower's out in that lagoon — you'll see them — if you're here beyond sunset, you'll see the red lights on the towers — and that is the primary EBS station.

COMMISSIONER EBERLE: But you don't have a down-link at this time?

MR. LITTLE: What do you mean, "down-link"?

COMMISSIONER EBERLE: The other stations that — the high ends of the primary —

MR. LITTLE: The other stations are supposed to be tied in through — like KNBR kicks on KSCO, which kicks on other stations in this general area. And those — those links, apparently, from what I can tell, did not work in this particular disaster, for whatever reason, I don't know. According to the gentleman — the man who operates KOMY in Watsonville, who was to be kicked on by — or kicked in, I should say, by KSCO — that did not work, which once again makes me realize that it's better to have a central source feeding out information to everybody at the same time. And then, if you've got 90 percent of them out — and you could easily have 90 percent of them out with an 8 earthquake, because most of the towers are top of that mountain, right at the epicenter of where this quake hit — if that was an 8, I'm sure that you would have lost a number of FM stations that are — that are on top of that mountain up there, where their broadcast antennas are.

And, of course, KSCO and KDON and a couple of other AM stations have their — have their AM towers on lakes and lagoons to get — to give it a boost in signal. But as Gary Griggs pointed out, that is a liquefaction area, and they could easily go down, as towers did for KCBS and KGO, I'm told, in this last quake.

So, the answer to me is, in a given disaster, you're much better off having — because we have the sophistication and the ability to do it now — a tone-operated system, where all stations would be able to receive. Those that choose to do so could also get sending equipment so they could chat back and forth with the EBS centers, and then all subagencies would also have direct link-ups with EBS centers as well, for information to be broadcast to the public.

COMMISSIONER EBERLE: One follow-up question. The actual operation of the EBS, when you had it here, did you have it extended broadcasting, or was it for short public notices? How did you actually operate?

MR. LITTLE: Initially, because we had nobody at the government center to talk to — as a matter of fact, at the time they ordered me out of the center, the station was prime to get somebody to answer the — you know, to answer their calls for the center to see if they could get some information. Nobody would — nobody even knows how to turn on the equipment at the center, much less operate it.

So, as a result, there was that void that they had there. But they did run, to their credit at KSCO — Bill Brooks had put together a series of informational commercials, if you will, or public service announcements, about, "Turn off your gas," "Conduct your" — you know, "Check your foundation," and to do these kinds of various things that you should do after an earthquake, and they ran those consistently.

COMMISSIONER EBERLE: To the public, yes.

MR. LITTLE: Yes. And they were having it — but they didn't have a whole lot — they got plenty of information about the Bay Area. We couldn't get anything out about here, which was pretty important.

And I — and by the way, I couldn't even phone — the phone lines, in that time of evening, was — there just wasn't any phone link-ups at all. We couldn't phone around. I couldn't phone other stations. I was trying to do that, and nothing worked.

I eventually got through to KOMY to Watsonville, and then I immediately — I was feeding them whatever information I could.

CHAIRMAN CLUFF: Further questions? Stan?

COMMISSIONER SCOTT: This is a question and comment.

Based on the experience with EBS in the Bay Area, where it just really didn't — apparently, just didn't work at all, I really was beginning to form the impression, and seemingly some others were, that maybe we ought to just give up on it, but — at least in a major urban metropolitan area, a region like San Francisco, Oakland, and so on. But you're basically saying no, that we should really work hard on it to make it work next time.

And my only — my comment is that based on our experience there, we've sure got a lot to learn to make it work next time up there. But apparently, you made it — did make it work here.

MR. LITTLE: We made it — yes, we did make it work, but I must say that, from my experience — and it's limited to this area — I have no knowledge of how things worked up in the Bay Area, what life was like for the media, what life was like for the government — from my limited experience here, the government people who are in charge — and I think this is pretty much everywhere — simply do not have the wherewithal to get that job done. It has to be done by people who understand it, who are trained in that area, and who know how to deliver an appropriate amount of information without panicking people, without doing those kinds of things.

And that's why I am suggesting, at the chagrin of a few government officials, I'm sure, the idea that pool people should operate the media center, and not government people. That's not to say that we couldn't have a major disaster where media people couldn't even get to the government center, and then the government people would have to act as a backup under those circumstances.

But I think they should learn to believe that they can trust people who are in the media, that they're not ogres, that they — they don't have fangs and they don't — and, you know, when these things happen, they're every bit as responsible as any other good citizen would be.

And as I say, they — it's not like they're afraid of the private sector, because they work with the private ambulance companies, the private hospitals, they work with ham radio operators, all of whom are private people, and they get along just fine. And there's no reason why that same relationship simply can't be developed with the media, because if they gave it a try, they would find it is so.

CHAIRMAN CLUFF: We need to move along.

COMMISSIONER EBERLE: May I say something?

CHAIRMAN CLUFF: Just quickly, very quickly.

COMMISSIONER EBERLE: Stan, I just wanted to mention that the state and federal government both are putting a very high priority on the EBS.

COMMISSIONER SCOTT: Okay.

COMMISSIONER EBERLE: And I think there's going to be some major improvements in that area in the future.

CHAIRMAN CLUFF: Thank you, Mr. Little, for coming to talk to us.

MR. LITTLE: Thank you for inviting me.

CHAIRMAN CLUFF: The next part of our program will be Al Panico, with the Red Cross.

Al — if you'd come up — is — it seems odd to me, given your last name and being associated with the Red Cross, kind of an oxymoron —

MR. PANICO: I was designed for disaster work, years ago.

(Laughter)

CHAIRMAN CLUFF: I would say, yeah.

MR. PANICO: Years ago. It's actually even more comical with our Spanish-speaking clients here and in Mexico, where I worked after the earthquake there in 1985.

Thank you for inviting me here today. I know several of the members — good to see you.

By way of introduction, I would like to remind the Commission of the disaster response activities of the American Red Cross. Of course, we initiate disaster assessment in order to ascertain the levels of assistance required for individual families in this disaster situation. We also provide shelter and mass care for all those affected and made homeless, or temporarily displaced from their homes by this earthquake. We also provide assistance — assistance to victims in replacing essential items, such as food, clothing, household goods, and caring for their medical needs, and providing also relocation assistance.

We do this by using a combination of volunteer and paid staff, and with money and supplies donated by the American public, either individually or by corporations. We are a not-government-funded agency, and the government supplies no money for our daily operations or disaster preparedness activities, although we are, by congressional mandate, the primary agency in the United States charged with assisting victims of disasters.

I will talk to you about the Red Cross activities in Santa Cruz, San Benito, and Monterey Counties. And in the four weeks following the quake, we were able to shelter approximately 3,000 individuals. That was providing over —approximately 17,000 bed nights of sleep. We did this using some 980 local volunteers, and 186 staff from outside the area. At the peak of our sheltering activities, on October 23rd, we housed 1,023 people in 13 shelters. And those are a maximum number of the shelters here.

And at shelters and for mobile canteens, and about 30 fixed — well, 15 fixed feeding sites and 30 mobile feeding routes, we fed about 9,000 meals per day during the first two weeks.

Up to this point, we've opened in 4,289 disaster assistance cases, and continue to open approximately 110 a day.

In this disaster, every available community resource is being tapped to assist the victims in the area. I can assure you of that. However, the Red Cross is severely stretched, because of our commitments and activities in Hurricane Hugo, and the lack of available — and a variety of experienced disaster personnel. Also, two of the local Red Cross chapter buildings suffered damage during the quake, and many of the staff and volunteers, who have been working hundreds of hours in relief efforts, have themselves been victims of this disaster and received major damage to their homes.

And there's this very human side of this tragedy that I'd like to tell you about today.

The first very evident difference between this earthquake and other types of disasters is that damage is widely dispersed and hardly — and hard to find, in other words, slowly located. In other types of disaster, Red Cross damage assessment teams, as well as government building inspectors, organize block-by-block surveys, which are time- and labor-efficient.

In this earthquake, it was obvious that this type of survey would not work. The damage was spotty, widely dispersed — you've heard it from others here today, and I'm sure you heard it up in your Northern California testimonies also. Particularly in the mountain areas of Felton, Ben Lomond, and Boulder Creek, as well as along both sides of Summit Road, were particularly hard to assess, due to the lack of visibility and the secured areas. In many cases, a half a mile down the road, a single dirt road, can lead to a cluster of ten or twelve families, none of which are visible from the main road.

The shelter population, because of this, grew steadily for two weeks following the quake, and as inspectors responding to requests surveyed homes and red-tagged them. Also, as Red Cross compiled addresses of people in our shelters and surveyed their homes and apartments, the shelter populations grew.

As the scope of this disaster became apparent, we quickly realized we were going to have shelters open for three and four weeks, and now, at this point, it seems that we'll run — I go in two-week increments up until mid-December, possibly longer.

The significant lack of available housing has caused us the largest hurdle, throughout the disaster, including the consolidation of shelters. In looking at a one percent vacancy rate prior to the quake, we knew that a lack of affordable housing would be a significant issue.

This has had another tremendous impact on our resources, as well as those of the churches and schools that host our shelters. And it causes the cancellation or moving of other functions, like weddings, churches, sports games, and other — it causes other unanticipated hardships for those that provide our facilities.

In addition to the four Red Cross shelters that opened in the Watsonville area, two tent camps emerged. At first, the tent sites developed because of the psychological needs of the victims. This earthquake released tremendous fears, I'm sure you've heard about, and also the — among all cultural groups. However, among the many Hispanic victims, the fear was particularly tangible. That is our major population of service, that we were providing services to.

And many of these people, as you know, have seen terrible damage due to building collapses in their home countries, and have little knowledge of California building codes, nor faith in statements by government authorities. Residents who were so noticeable to the media as they lived in parks and tents, as well as in many of our shelters, were extremely reluctant to return to their dwellings, as they still are, even after they're determined to be safe.

Counseling that we've conducted in the shelters was only partially successful for people even returning to homes with green tags.

However, once the tent sites were established, we were unable to convince residents to move into more suitable shelters, where they undoubtedly will be more comfortable. Although that is now occurring, the two tent camps remain, although we are continuing to try to consolidate them. That's both Callaghan Park in Watsonville and Ramsay Park.

I have just been told, before I came here, that this afternoon we only had 10 people left in Ramsay Park, and the rest of the victims there have been consolidated into the fairgrounds shelter, and I'll tell you about that in a minute.

Well, these shelters have produced several regional situations that were real challenges and opportunities for our Mass Care Department. We've arranged for bus schedules between schools and the DAC's, along with FEMA, and Liftline, which is a local transportation provider, between them and the Red Cross shelter, though we have had difficulty even getting that program establishing and providing the grant proposals through FEMA and through Liftline, to have a daily schedule of buses from the fairgrounds to downtown.

Also, providing for the cultural diversity of the population in providing and meeting their food needs was also a challenge, but we have met that in every instance that we can, and challenging our own staff and changing some of the way we deliver service, yet keeping with our nationwide disaster standards.

Well, among the problems that arose that we had probably not addressed adequately in our planning are several other very human problems. For instance, what do you do with belongings, with your furnishings in your house, when your house has been posted unsafe? If the people leave their belongings to go to a shelter, they're often stolen. If they're not stolen, they're often inaccessible to the victims when they have found new housing and want to retrieve their furnishings. They're also reluctant to leave their belongings behind, because of — the landlords are reluctant to let them leave them there because of the liability that they face, but if they pull their furniture out on the day the building is posted, unless they own their buildings, there's no place to store it, although the City of Watsonville has provided storage facilities in that case. They've been very helpful in that area.

But we find many people still staying in hazardous buildings in the outlying areas, for fear of losing all their possessions if they vacate. And we can't convince them to leave.

Another area that provided us with concern was the building — the follow-up building inspections. And several days after initial inspections, in a few cases, buildings which had been posted unsafe were then determined to be safe. We understand that, and that's very fine, but it provides an emotional hardship on the victims, who continue to mentally question the safety of their own dwellings.

Second, it creates complications for the Red Cross, because those people who were initially evacuated from a posted building that we've already provided services to, and are now in perhaps new housing, new rental housing, are now, by our definition, not eligible, because their home is now safe. Now, of course, we would not discontinue service. We would keep them in their rented building, but at the end of that rental, they may not be eligible for FEMA assistance.

So, it creates real hardship on them. That's just a point to keep in mind in our planning.

Additionally, there has been a great deal of confusion in our district concerning the interpretation of some of the posted signs. It might be wise to study the signage used in this type of disaster and make sure that the markings and clear and prominent, and in each predominant language. This is our posting — this is primarly government postings and understanding what they are.

The final factor in dealing with victims of non-American cultural background is their considerable reluctance to accept assistance. In the first place, many of them are unfamiliar with how to access government agencies. Faced with only printed instructions on how to get assistance, and, as you know, at times not printed in their own language, for various reasons, or, when they are printed in their language, perhaps printed at a higher literacy rate than they're accustomed or they have the ability to read, and these people fall out of the system.

In addition, transportation is a major factor for many victims, as it takes time away from their jobs in the necessary processing. It's also difficult for them to understand why they have to register so many times, register in a Red Cross shelter, register at a Red Cross service center, register at a federal disaster assistance center, register with a new landlord, register with the grant program — the different — and the many times that people have to register does provide real serious questions for people who are reluctant to accept assistance in the first place.

Again, I know you've heard it before, but I hear it every day, every night, every morning, and then on the weekends too.

Anyway, the need for bilingual and bicultural education for our disaster workers is very apparent in overcoming this frustration, particularly in these areas of California.

Another special population specific to this job has been the people living in the mountain areas above Santa Cruz. Not only was the damage assessment nearly impossible, but the home visits were lengthy. We have a significant number of seriously affected victims who are still reluctant to leave their dwellings up there and come into our service centers. The people are independent and capable, and feel that they can care for themselves. However, now they're still coming in for assistance, even at the rate — I was in Felton this morning — at about ten new cases a day.

We're continuing to identify these new cases, again, even after four weeks. These people will, however, in six months or a year, after the rains, become victims again. And it will kick them back into the system. So, planning now to be able to deal with the people in the system is critical, both for the Red Cross and government and other nonprofit agencies.

Since Red Cross is still in the emergency phase, our operation center is still operating, still open seven days a week, we still have five service centers open, three shelters — it's premature for me to recommend anything to the Commission, but I do have some comments and some preliminary concerns for your consideration that I'd like to share now.

This also means I'm coming near to the end of my talk.

First and foremost, I would address the critical need for low-income housing. I know you've heard it before, but if ever there was a time for bold and innovative legislation addressing the housing issue, it seems that now is the time for that. I would encourage the members of this Commission to use whatever influence you have to urge the streamlining of the temporary housing process. We have families living in extremely undesirable environments, being supported by the Red Cross, who will — and these families who have to wait for the slow process of establishing temporary housing.

All public officials from each governmental sector should be urged, by whatever means possible, to facilitate their role in this process, as they are doing.

I also urge that a consortium of agencies, both government and nonprofit, be brought together under strong leadership to design a long-term solution to solve this problem.

Models for solving low-cost housing problems are available from other communities in the United States, from our own state government of California, but perhaps it's time to look beyond our country for solutions. Community development models exist in organizations like the United Nations Center for Human Settlement, Habitat, in New York, also through the International Red Cross. These agencies are working to solve the problems of low-cost housing in other countries and have learned valuable lessons that I think we can apply here.

Second, the psychological impact of the earthquake is a major consideration. County mental health resources were stretched to the limit. Many offers of voluntary assistance from private, professional counselors and psychiatrists were received by the Red Cross, but there is no system for screening such professionals to determine their credentials and experience in dealing with disaster victims, nor for allocating them efficiently. Such a screening process, I believe, should be explored by the state.

Another consideration in the area is in the area of earthquake education. We have made considerable progress within the Red Cross in providing our materials in different languages. We should make greater efforts on the part of the Red Cross and other agencies to provide pre- and post-disaster information available in many languages, for many different levels of literacy.

Much of the basic information could be prepared in advance, with space for local specifics added at the time of a disaster.

All — in addition to that, all disaster preparedness information should include information for the public that discusses the American Red Cross as the first line of assistance for individual victims of disaster. Time and time again, we find that a high percentage of educational materials that the population read do not include what the private, nonprofit sector provide to them. It highlights what government agencies provide, and what the government responses will cover, but not as well the local nonprofit or American Red Cross response.

I know the state has done a fine job in many of their publications, but more must be done.

Finally, I would ask the Commission to support the efforts of the legislature to legislate a state employee disaster worker program. Recently, such a proposal was made through some channels to the extraordinary session of the legislature, which would grant leave with pay for state employees to accept Red Cross disaster assignments for up to 30 days per year.

The State of Ohio enacted such legislation in 1983, and has made available talented and experienced state employees for Red Cross assistance programs. In fact, several of their employees have worked directly for me on this operation, here in California, and they will take back to their state valuable experience they've learned on this disaster, and training which they will apply to their own states.

Thank you for the opportunity to appear before the Commission. I'll be glad to answer any questions and stand by, either now or later.

CHAIRMAN CLUFF: Thank you very much for your very articulate discussion and raising some issues that are not new to us, but certainly important for our record.

The social issue of the need for low-income housing, not only after an event like this, but the difficulty we have as a Commission, that one of the interest groups that appears to be against seismic upgrades is the people who are sponsoring need for low-income housing, because when you start doing upgrades, it raises the rents, and then — and there are all kinds of difficulties that affect these people.

So, there needs to be a solution that looks at all aspects and we make the proper tradeoff, so that we're not compounding the problems for these people who can't afford to do anything. We end up just putting them out on the street, and that's not what we want to do.

So, I wanted to ask you about some of the decision processes having to do with the building posting and so forth. Apparently, you had a chance — some of your people were involved in assessments themselves — how can we improve this accurate information and the confusion that I witnessed in many places where I went, where complete inconsistency — with some people being given unlimited access to their dwellings, where others were given fifteen minutes, and in my judgment, the ones that had the unlimited access were taking a higher risk than the ones that were only given fifteen minutes. And I realize this may differ from area to area.

But how can we look at the lessons out of this decision process so that next time we can improve that, and we can get some more effective decisions and apply them consistently?

MR. PANICO: That's a good question. The information and the standardization of procedures following this type of disaster would seem to me to be the best way to avoid the confusion. I think it was because they were given different instructions by different people, even in different areas, even from one county to the next, is what we experienced with the people that then came into our centers, and they're the people that came to us with questions that we could not answer, because we even got different answers.

I would have to say it's just a matter of — not just a matter of, but, you know, I would think it starts with the predisaster standardization of the tagging system, and the instructions that go with it.

CHAIRMAN CLUFF: Thank you.

Further questions?

I think, Bob, you had one?

COMMISSIONER McCARTHY: How are you doing for money? Are you short or —

MR. PANICO: Well, I think, at this time, in all the disasters that we currently have, which all our fundraising has been directed to, both Hurricane Hugo and the Northern California earthquake, we've raised a total of approximate — last I looked, it was $76 million. The total cost of operations, with the disasters in the United States, is now at the point of $94 million. And approximately $16 million or $17 million of that is the Northern California earthquake; the remainder of that is for the Hurricane Hugo activities.

And I think we've raised — we have in hand, as I understand, about $72 million. So, we're — we're still teetering, but it's been an expensive year.

The public has been phenomenally supportive.

CHAIRMAN CLUFF: Following that up, I had heard that this, having such international focus, had actually helped finance the recovery of Hugo as well. Is that accurate?

MR. PANICO: Well, the money that we've raised has been really for both disasters.

CHAIRMAN CLUFF: Yes.

MR. PANICO: We were in a $40-million campaign for Hurricane Hugo at the time, and they both — both of them together, this has helped us considerably, worldwide. We've had donations from Japanese companies, Brazilian companies, the Armenian Red Cross, to our efforts.

CHAIRMAN CLUFF: Further questions? Keith?

COMMISSIONER UMEMOTO: Yes. First, I'd like to ditto all our accolades of the American Red Cross and their efforts. And I don't know if we can applaud you enough for your efforts.

Secondly, I kind of wanted to know, being in the social services prior to working for the legislature — wanted to know specifically, how did you actually design a plan to outreach to a lot of the outlying areas? I know, in terms of the media exposure, it pretty much focused on certain areas, but definitely did not cover all the disaster areas.

How did you outreach to the mountain areas? Did you actually go out to those areas? Because, on the 19th I went out and did my own review of the areas, and there were certainly areas of very low-income people that I would venture to say would not be privy to a lot of the information. They didn't have the radios, they didn't have a lot of the — and their housing stock was — well, one of the places I visited, the people just — just left their home because it was not liveable any more.

How did you get to them?

MR. PANICO: The one specifically, in the mountain area — and there's ways of doing it in different ways — flyers that people actually took out and posted. In one neighborhood, we had a postman that went out and was willing to put flyers into people's mailboxes. Another one was in Felton — or Ben Lomond — there's a really great Valley Resource Center, and we put posters up around the town, and our flyers that we had specifically printed for a disaster, our victim information, and also worked through that agency and got through some of the social service agencies that would get calls, and they made referrals to us.

Doing a Spanish-language in the Watsonville area — a vignette — in fact, they're taping it — they're taping a new one tomorrow, where, instead of just telling people what we're doing, we're doing like — like we've done in many — so many meetings in the area, is people are — a Spanish person, a Spanish-language victim, would ask the Red Cross questions, and then we would respond to a question on the radio. They ask a question of a FEMA person, and they respond to the question on the radio. It's a dialogue, rather than just telling people what the services are, answering questions.

That was another way, in the Spanish language, was actually getting flyers out into individual people's hands, along with the radio and —

CHAIRMAN CLUFF: Other questions? Dan?

COMMISSIONER EBERLE: Al, I had an opportunity to hear your presentation after the Whittier earthquake, and I'm amazed at some of the similarity there between the two presentations, where you mentioned there about the long-term sheltering problems, some of the new things that came out then, the language problems, the need for help in the sheltering, and the mistrust of the governmental officials, the mistrust of the buildings, and the whole language problem and psychological problems.

Was there anything that struck you this time that is new, or something that you hadn't incurred before, that we should really look at?

MR. PANICO: I would have to say the fact that we didn't learn our lessons on the last one struck me as odd, and that they didn't all automatically apply here was odd, both within the Red Cross and even government. That we were still learning the same lessons over again is what struck me as odd, and I've been away for a year, and that struck me as odd.

Otherwise, it was basically some of the similar problems. I think, in the northern part, in Oakland, and San Francisco, the urban problems, the homeless, the housing, is only getting worse, as we had — every new disaster makes that problem — it highlights that problem even more critically and more seriously, and indicates that we're not really addressing that, as a community of disaster management professionals.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: We heard testimony from San Francisco and Oakland about the large numbers of chronically homeless people in the shelters. Do you have any feel for percentages in this county, as compared to what we heard in San Francisco and Oakland, what people in the shelters or people in need that were chronically homeless or homeless before the disaster?

MR. PANICO: I think the numbers of — as we call "previously homeless" and homeless because of the disaster was much lower here than it was in the San Francisco-Oakland area. And I would have to say, really off the top of my head, maybe 10 percent —

COMMISSIONER SNYDER: I would guess.

MR. PANICO: — or somewhere, or even less. It's more — it was here more — maybe a little more than other types of disasters, other areas, but still, within a — what you call an acceptable range, or a more reasonable range.

COMMISSIONER SNYDER: And hearing the fire chief testify this morning from Watsonville, I gather that they had more people who were living in really substandard housing. They were living in their campers or in chicken coops, or whatever, but people were living somewhere. They weren't living in parks. They weren't chronically homeless. Has that been your experience also, the people were living in marginal type housing in this area before?

MR. PANICO: One of the — yes, it was marginal type housing. Also garages, which there's a lot of people in California living in garages, buildings over a top of garages, buildings over storefronts that aren't really apartments, but they're just rooms, and one or two families live in them.

It is — there was a problem also with multiple families living in one apartment. Now that they have moved out, and even if they could move back in — they'd be moved out if their building was posted red, the building was reposted green after a subsequent inspection, but the landlords won't let three families move back in.

There's those kinds of cases that are actually legal aid issues that are addressed through that avenue. But it is problems that occur in developing countries. And part of my job is international services with the Red Cross, and I see it in other countries. And I — I seriously think that we have lessons that we could learn from others, and actually, solutions that we export from this country to other, less developed countries, but that we don't use, ourselves.

So, yes, they do live in substandard and marginal housing.

CHAIRMAN CLUFF: Well, thank you very much.

MR. PANICO: Thank you.

CHAIRMAN CLUFF: We need to move along.

The next is Carole Nelson. She was scheduled earlier and wasn't able to be with us —

EXECUTIVE DIRECTOR TOBIN: She's here.

CHAIRMAN CLUFF: She's here now. Oh, okay. Fine.

Anyway, we're giving Carole a chance to come up and talk to us.

Welcome, and you sat in on enough of this that I don't need to repeat what we're about. Please give us the benefit of your comments.

MS. NELSON: Thank you. This has been a very instructive afternoon for me, and I've really enjoyed every moment of being here. I've learned quite a bit.

I just have a few things to share with you. I'm Carole Nelson, and I'm the principal planner for development processing for the City of Santa Cruz, so I supervise the division of the Planning Department that entails all the planning permits and all the building inspection activities. The chief building official and all the inspectors are under my supervision.

So, while the Pacific Garden Mall was really what I call the sexy part of the disaster, and got a lot of attention, my responsibilities were primarily focused on the rest of the city and trying to respond to the needs of — you know, of the infinite number of property owners and occupants that were also needing attention.

And so, as a result of that, I have a few observations that I really feel would be pertinent to your mission here this afternoon.

Our community — I was — I was very impressed with the response of our community and neighboring communities, in terms of responding to the disaster. Within an hour of the earthquake, the mall area, which was the worst concentrated damage, was secured. There was no looting. People had been removed and brought to shelters. The town was very quiet. It was really a very impressive amount of work by all emergency services, et cetera.

The personnel from the Office of Emergency Services that came in, the inspectors, the structural engineers, were the highest quality volunteers. They were really impressive and easy to work with and very supportive, and gave a lot of both technical and psychological support to those of us who were not only acting in emergency work, but also, perhaps, having disasters of our own to deal with, and our own properties, and our own families.

However, we could not have done this without technical volunteers from other municipalities and counties, over a longer term than the first few days after the event. Without volunteers from Southern California building inspectors, primarily, that could come up for a week or two weeks at a time, there was no way that I could meet the need in my community.

We normally work — I normally work with a staff of three: the chief building official and two building inspectors. Today, almost a month after the event, I still have 500 unanswered requests for structural inspections that I can't meet without additional volunteer assistance.

So, I think that what I'd like to emphasize is, it really is important to develop mutual aid agreements that last over a longer term than the immediate days surrounding the major event.

The second observation I have, that I think this Commission could really deal with, is to get a realistic definition of the emergency and the event for an earthquake, in terms of the Office of Emergency Services, the concept of having a major earthquake, and then a 30-day emergency period, while all the time you're having major aftershocks and your damage continues to escalate, is not really realistic.

I'm a planner, and I've had years of training in what to anticipate, in terms of earth movement and liquefaction and lateral spread, and all these earthquake factors, but until I saw it in my own eyes, with my own — in my own community, I didn't realize how subtle it is, and how difficult it is to even evaluate what's happening, except after several weeks have passed.

Technically, Friday, this coming Friday, will be the end of our emergency period, yet just yesterday we were finally able to ascertain that in a residential hotel very close to — very close to this, there has been sufficient liquefaction under the building that the building, which was judged to have minor damage right at the event, is now in immediate danger of collapse.

So, I really feel something needs to be done about the definition of the emergency period to define it after —after aftershocks, after a certain magnitude, because that damage is really significant.

And the third pitch — I know a lot of people have spoken about money, but I'd also like to bring up the fact that although municipalities have recognized for a long time that this is a very important — seismic safety is very important, and it has to be met, the tools have simply not been there.

I've worked for the City of Santa Cruz for about fifteen years now, and I've worked in low-income housing programs, and I've worked in historic preservation programs and all around, and I have tried in each case to manipulate the funding sources that were there to make improvements to accommodate seismic safety improvements. And the dollar ratios were just never built into that program, to be able to do the retrofit that was required, and still meet the formula of these various funding sources.

In fact, I worked specifically with owners of two of the buildings on the Pacific Garden Mall for months and months to try to put together a combination of grant and loan programs to allow them to retrofit those buildings. Those buildings are now gone, because the dollars never really worked out, or the strings that were attached to it really didn't make any sense, because we were trying to do something with another funding source that didn't really address seismic retrofit.

So, what I'm saying is we have to get money specifically earmarked, with very clear standards and very clear direction.

We have — in a small community like Santa Cruz, the economic and social factors are real subtle and very interrelated. It's very difficult to separate business needs from social needs, et cetera. So, it's — the assumption that if your unreinforced masonry buildings are in the business district, the business district can take care of the cost of retrofit, doesn't really work.

We've tried to address it by not passing regulations that can't be implemented, but doing what a lot of planning agencies do: ask the private sector to pick up the cost when there is a benefit.

In a lot of our unreinforced masonry buildings on the mall, we've had vacant second stories for a long time, upper stories that were under-utilized. And we said, "No, you cannot occupy those upper stories until you retrofit those buildings," waiting for the market to have enough force for the property owners or the occupants to be able to do that. They have not, to this day, been able to do this, aside from waiting fifteen years for this to happen.

I'd say, in very isolated cases, did the economics finally work out for the owners to be able to do that. And in the two cases where the owner did do that, the buildings held, there were no lives lost or injuries there. The buildings were not saved. We lost the buildings, but we saved the human lives, and the community is very grateful for that.

So, again, I think it is not an easy thing to address, but we really need to look at it very realistically in small communities like this. We are now working on trying to develop — I think, within days, we will be adopting retrofit codes, just to give a clear message to the people in the community on what to respect in the recovery period, and to help people make their decisions in terms of what's going to happen with their properties.

How that is going to play out remains to be seen, and I think that I'd like to be able to communicate with you over time, so that you can then see the implications of these kinds of decisions.

CHAIRMAN CLUFF: Thank you very much. This whole business of seismic safety decision-making and the facts that one has when one makes decisions, and then, given hindsight, how you wished you would have had additional information, and, on the other hand, some of us already had the information, but we hadn't effectively communicated it to the right people. It's a complex thing of continual education that we have to always do, and we need to become more effective in that.

So, questions? Bob?

COMMISSIONER McCARTHY: Carole, you were talking about the building owners being, you know, an integrated part of the community, and of being a small town, and I can relate fairly well with what you're saying.

But I wonder how a building owner would feel if now he owns his building does not meet recognized standards, he does present a hazard to people that enter the building. I would think the personal liability aspect would weigh very heavily on him in regards to continuing to occupy or use the building, or expose the other members of the community to something that he knows is not safe.

It seems like the type of a thing that lawyers live for, you know. How do you feel about that aspect of it? Or have the building owners expressed themselves about that?

MS. NELSON: Oh, in my experience, I have — I don't think there are any irresponsible building owners. I think they all are concerned, and they all feel a part of the community. It's a matter of giving them a mechanism, a realistic mechanism, whether it's low-interest loans or deferred loans, or some — some kind of tool that they can use to actually accomplish it. I think we would not have any problem getting all of our unreinforced masonry buildings made safe if we could only have the right mechanism to offer the property owners, because they want to do it.

But it's a matter of saying — if the economics don't work, if the banks — I mean, certainly the properties I worked on, the banks would not loan on those properties.

COMMISSIONER McCARTHY: But if he doesn't repair his building, is it a kind of a Russian roulette he's playing?

MS. NELSON: That's right. Then he has the option of selling it to someone else and losing his livelihood, you know, because we have a lot of owner businesspeople in a small town like that.

COMMISSIONER McCARTHY: But this dilemma has been brought on by nature, hasn't it? I mean —

MS. NELSON: That's right. That's true.

COMMISSIONER McCARTHY: Are you — on this retrofit plan, do you have any idea of the — of what kind of requirements you're going to set? The reason I ask is because this Commission has published suggested means of retrofitting.

MS. NELSON: Yes. We're looking at the suggestions of the Commission. That seems very realistic to us. And, in fact, we sent some recommendations to the council this afternoon, so by the time I get back to the office, they might have actually moved on this. But I'll know that tomorrow.

Any other questions?

CHAIRMAN CLUFF: Further questions? Bill?

COMMISSIONER WASTE: Ms. Nelson, there will be, you know, a certain amount of pressure on city officials to — for the owners to open these buildings up without being able to strengthen them, you know, and, you know, yellow buildings will become green. It's happened in other places, and it might happen here. Does the city attorney advise the city council has to what the City's obligations might be, permitting people to enter those buildings again without warning, without a big warning sign? Have you discussed that at all?

MS. NELSON: I feel very confident that the City is not succumbing to political pressures in terms of building safety. In fact, in terms of those buildings, especially in the downtown, there have been three or four independent analyses by different structural engineers independently hired by the owners, and independently hired by the City, plus our building officials. I think those buildings have had more medical analysis and prognosis than anything.

We have — we have problems of interconnected buildings, some buildings that are sound but have walls that are interconnected with buildings that are unsound, some buildings that we're not really certain the extent of the damage, but if they do list and fall, they will impact other buildings that are sound. So, we have a lot of decisions to make in forthcoming weeks, not simple ones, at all, in terms of reoccupying buildings.

Meanwhile, if you've been downtown, you've seen that the City — the City had a wonderful barnraising, contemporary barnraising, this weekend, where all these sprung steel and fabric structures were put up by volunteers, all around the perimeter of the mall, so that the businesses that have been displaced from the buildings on the mall can relocate and have a Christmas season. And it still gives the City time to evaluate, you know, safety precautions in terms of the existing buildings.

CHAIRMAN CLUFF: That's a wonderful solution that I hope a lot of people look at, to consider that way of making careful decisions.

Thank you very much.

MS. NELSON: Thank you.

CHAIRMAN CLUFF: The next item on our agenda is James Waste. He has a very familiar name, and I'm going to ask our distinguished commissioner, Bill Waste, to introduce him.

COMMISSIONER WASTE: If you meet anybody with that name, he's a relative, and probably originally of Scottish descent.

Jamie came to the table, however, by his own record. He is program director for the public broadcasting station here in Santa Cruz, and had previous experience in Juneau, Alaska, and the University of California radio station. He is my nephew, and after that, he has to speak for himself.

MR. J. WASTE: I understand Dick Little was here earlier. Is that correct?

CHAIRMAN CLUFF: Yes.

MR. J. WASTE: Good. I wasn't sure if he was going to be coming in or not, but he was the right person to get, in terms of representing the radio end of it. Dick did a great job.

So, what I have to say may be a little bit redundant, or I may end up just reiterating some of the things that he has talked about already.

The first thing, regarding the emergency broadcast system itself, I'm not sure whether it worked or not here, locally, because when the earthquake hit and our emergency generator kicked in immediately to keep us on the air, we never received a message. We still, to this day, don't know if any message was sent to us. And I have since talked to another program director at another radio station in the area, and the same confusion existed as to whether or not this obvious disaster was an emergency to the extent that we were not supposed to be on the air.

Our emergency backup generator ended up being a natural-gas-powered one, so when the gas got turned off in our building, we went off the air as well. We did not get back on until the following afternoon, and we were still unclear at that time whether or not we were supposed to be on.

Now, overnight, KSCO had been doing a good job of getting information out, yet we were hearing multiple stations in San Francisco, we were hearing stations in Monterey County, and we had no — we didn't know for sure whether or not we were supposed to be on. We went ahead and got back on.

So, I'm not sure whether Dick Little and representatives of the emergency broadcast system feel that it did work or not. To us, it was confusing, but we perceived a community need. We're a news and information station, by and large, and we perceived the need to supply a community service.

The other thing that really struck us when we did get back on was the information chaos that ensued. Once we got our phones back on, we were handling perhaps a hundred calls an hour, which, for our radio station, is just — it's, you know, unreal. And it became increasingly difficult, more and more difficult for us to know for sure whether or not we had accurate information.

When we would try to get a hold of PG&E or any of the organizations that we needed accurate updates from, they were almost impossible to get a hold of. Now, I saw one comment written down back here from Dick Little, about what Dick Little had to say about having some kind of pooled media cooperation. I think it's a great idea, because if there were some set-up nexus for information, where a station knew that it was going to have a pipeline to PG&E and a pipeline to the telephone company, and so that you knew for sure that you had the most recent information, it would have been a great help, because, as it turned out, there were times when we were giving unofficial-official unconfirmed information out over the radio.

Perhaps we shouldn't have been on at all. And to this day, we're still not sure. We feel like we did a great community service, and we had a lot of people relying on us for information. Yet that probably remains as the biggest concern we have, is certainly this was a disaster and it was an emergency, yet it was very unclear as to what our role was supposed to be, if any.

I'm not sure if you're interested in the specifics of what happened to our radio station during the event or not, or more interested in what I just have to say, kind of a general overview of what the problems were.

CHAIRMAN CLUFF: Sure, if you can briefly let us know what the — what the situation was, that would be helpful for us to understand the circumstances that you found yourself in.

MR. J. WASTE: Okay. I was actually not at the station, but I've talked to the people who were there. On a — on a normal day, there would probably be anywhere from 10 to 15 people within the station. On that particular day, there was only four, and it may have had to do with the World Series coming up, which is quite lucky — and, for that matter, a few days later, we were supposed to do a membership drive, and we had a wall of records crash down, which, had it been four days later, would have crashed down upon a table of volunteers answering phones.

So, one obvious thing for us was that all the record libraries have since been reinforced so that they don't come crashing down in the event of another earthquake.

We were knocked off the air immediately. We have an emergency backup generator that kicked in. This generator was put in place in 1982, after the — I wasn't here in this community then, but after the flood disasters back then, well, as it turns out, it's a natural-gas-powered one, which obviously didn't serve us well when the landlord turned off the gas to the building, even though there had not been damage to our own gas and immediate — he did it out of concern for his building.

One phone line remained open. The electrical phone circuit went out, and we immediately started getting calls. Our news director started handling those calls. Our production director went back on the air immediately, and said, "Yes, that was an earthquake. Bear with us. We don't know what to do right now, but we'll be back with you in a moment, and he scrambled, looking for some — an earthquake booklet that we had laying around somewhere that had been — we'd received in the mail, and started to pass on some of the generic information that was in there.

Phone calls continued to come in, and we were on for approximately fifteen minutes, at which point the gas got turned off in the building, and then we were gone. It wasn't until the next — so, those people hung out for a while and answered phone calls, and basically told people, "No, we are off the air. Tune into KSCO."

At that point, they had — they had tuned in a battery-powered radio and KSCO was up, so they said, "Tune in KSCO; they are the official emergency broadcast station." They stayed until dark started to come, and then they realized things were bad, because they'd started to listen to KSCO, and they could see smoke on the horizon, and they left. They made the decision to stop trying to get the gas back on in the building, which I think was a good decision at that point.

And by early afternoon the next day, a number of us had gathered back at the station and had cleaned up, and had the landlord there working with us. And as it turned out, we had a volunteer who had access to a backup liquid-gas-powered generator, brought it down for us, to get us back on the air.

So, by early the next afternoon, we were back on the air, using that power.

It was another three or four hours before the gas was turned on again for the building, at which point our own emergency backup generator kicked in, and then it was another two or three hours before power came back to the whole area.

Once we were back on, I just — the most comprehensive comment I can make is simply that it was information chaos, in terms of — we're largely a volunteer staff, small staff — small paid staff, 150 volunteers. And the volume of phone calls, people — you know, people really upset, people crying, people confused and dazed and not — and even telling them that, you know, "KSCO is the official emergency broadcast station," people still calling us, looking for information, "What do we do?"

And it was just real stressful to know that you were passing on information, and at times the information you just passed on, from an unofficial — somebody getting ahold of you over a cellular phone up in the mountains, which contradicts what PG&E has just said.

And that happened a lot in the first 24 hours. Even into the first 48 hours, it was still very confusing. And we monitored KSCO a lot, and KGO and the city stations, and it was apparent to us that between KUSP and KSCO, that neither station, for the first 48 to 72 hours, really got caught up with what was happening. And it was — still felt like by the seat of our pants, that far into it.

It settled, to some extent, and a lot of the general information and advisories, you know, became more and more — I mean, that settled people down, but there was still that sense of, "Nobody really knows. Nobody really knows, right now, exactly what's happening except for those people in the office who do know," and "Have they gotten the information out to everybody else at this point?"

So, it was very confusing for people who were relying on radio. You know, fortunately, radio is there, and was there for them. And it just made us think that, in the event of a disaster in the future, if there was some way of having some central system that kicks into gear immediately, in terms of those key organizations having access directly to media, and some kind of hourly update, where you don't have — I mean, we tried to call PG&E for days. I mean, we have — we'd have five or six people trying to call PG&E to get — and here we're not supposed to be using the phones. But everybody's calling us, saying, "What's going on?," you know, "When are we going to get this?," and "When are we going to get that?" We would have preferred not having to make all those phone calls and to spend all that time to try to get through.

If we'd known that every hour there was going to be a media call that's going to sweep to whatever stations are supposed to be on the air, even if it's just the one EBS, and we would have been more than happy to pool our News Department resources with KSCO and work with them. The fact that Dick Little, coming over from KTOM — it's — it was great, and we probably, overall, could have done a much more effective job had we pooled everybody.

I don't know if KSCO had that definite link with all these organizations or not. I don't know if it was just as confusing there. It sounded like it — it sounded like they were doing the same thing we were doing, and that was getting handed slips of paper with handwritten notes about, you know, the latest phone call.

There was some scary, erroneous information at times going out, about tsunami warnings in Capitola, and being evacuated, and this, that, and the other. So, it was confusion.

I think KSCO, over all, did a very good job. It was interesting — at first, I was kind of critical. That first night, I kept thinking, "God, it just doesn't sound that accurate," you know, "What do I make of all this?" And by late the next afternoon, after being on and doing it ourselves, I realized exactly why it sounded that way, and that they were doing a good job, because we sounded just as unsure of what we were doing as they did.

So, I don't know if this is redundant or —

CHAIRMAN CLUFF: No. That's certainly very valuable testimony for us. It fits in and reinforces the need to better organize and integrate our communication, from the radio and television, and involve people in positions of knowledge and authority that know how they can get cranked into that. That's the problem with a lot of us. We may have had some very important information, but because of some of the same circumstances, couldn't get plugged in to the right place.

MR. J. WASTE: Um-hmm.

CHAIRMAN CLUFF: You may have been hoisted by your own petard, in terms of the first hour or two, radio and television was advising everyone to turn their gas off. And, of course, that was the wrong advice. Gas is only supposed to be turned off if there is the smell of gas and there's a leak.

Now, of course, it's a personal decision. Some people still chose to turn their gas off, and that's fine. They've been instructed to do so. But you had a gas-fired generator, and it sounded like there wasn't the smell of gas in your building, and that it would probably have been better to leave that gas on. Maybe a private line into your generator is the solution to that, that you can control yourself.

But it's — we're learning from every one of these, and clearly, the news media, radio and television, have a very vital role, and did. Those who did perform, performed wonderfully. But we can improve it and make it more effective next time.

Maybe there are some further questions.

COMMISSIONER SNYDER: I just want to make a statement.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: I know that the Office of Emergency Services has written and published messages to be put on the air after an earthquake. I don't know the distribution system. Perhaps those go down through OES chains of command, and maybe are never disseminated to the media, except at the local level, if the OES or civil defense person cares to do that.

But you don't believe that you've ever received any guidance or direction of that type?

MR. J. WASTE: Well, I do have — this is what Larry ended up finding and starting to talk about on the air, which may be what you're referring to, the initial announcements —

COMMISSIONER SNYDER: Is that from Office of Emergency Services? I can't read from here. Or BAREPP? Well, BAREPP is not — that's part of — but OES at Sacramento has done some things like that, you know, for April, for Earthquake Preparedness Month, for one thing, I've seen them put out some messages like that. So, maybe we need to look at a better distribution or dissemination of information that is already in existence.

MR. J. WASTE: Well — and also, we were completely unprepared. And it can be either complacency or whatever it is, but we were just like so many other organizations. It was like, "Oh, yeah, earthquake." I'm sure the next time that anything is sent out to radio stations, I think people are going to make sure everybody —I mean, they're going to deal with it, rather than just saying, "Oh, we'll put it over here, where we" — just like we've done all these years.

I'm just curious what Dick Little did have to say. Was it his understanding that the EBS system had worked in this area, or was there any confusion on his part?

CHAIRMAN CLUFF: Well, no. His — again, we don't have time to repeat, but on the testimony, his views were that it didn't work, and that people took charge of things on their own, and communication finally was effective, but it was rather confusing for a while, similar to —

MR. J. WASTE: Okay.

CHAIRMAN CLUFF: — the story you had to tell.

We want to thank you very much for being here, and we'd like to move on to the next speaker. We're behind schedule. The chairman of the Santa Cruz County Board of Supervisors, Gary Patton, is here with us.

Welcome to our Commission hearing. And we know that you're a busy man. Your county board of supervisors certainly is a responsible decision-making group, and we welcome you here to share with us things that worked and things that didn't work, and how we as a Commission can work with you and your organization to further improve seismic safety decision-making.

MR. PATTON: Well, thank you very much, and welcome, on behalf of the board of supervisors, to Santa Cruz County. We're very pleased that you came here so shortly after the October 17th earthquake, really, to get a firsthand assessment.

I think probably what would be most helpful would be for you to ask me any specific questions you have, since you've gotten a lot of information. I'd be glad to follow up.

Let me perhaps just make a few introductory remarks. And that is that this was clearly a major earthquake. It was, as I understand it, the second largest earthquake in recorded California state history, and certainly the most expensive natural disaster that we know of so far in the state's history. And we were at the epicenter of it, and we have been very, very severely damaged.

And the schizophrenia of any disaster, which we have learned about before, is with us in this one as well, which is, say, 90 to 95 percent of the people, other than minor inconveniences like having their power turned off and having a few dishes broken and maybe their chimney fell over, really are, at this stage, prepared to get back to normal life, and would very much like to do that, and really haven't been severely affected in the long term, directly.

However, there are approximately 2,000 homes in this county that have either been demolished or are so substantially damaged that they're not fit for occupancy now, and that will take probably a year or so to get houses back for those 2,000. Furthermore, when they are rebuilt, the question of whether they'll be affordable to the people who owned and rented them before is a very, very significant question in our community.

We have two major economic centers, the downtown of Santa Cruz and the downtown of Watsonville, with other economic areas affected to a much lesser degree. But these areas are essentially out of busines at this time. Even for those businesses and buildings that were not damaged, the entire area is so damaged that there is no economy at all, which means, of course, the business owners, the property owners, the employees, and the local government that depends on the revenues, are all in a very, very significant economic crisis and, again, expect to be for the next year to two.

We also had major damage to public facilities, which I think we're very lucky, with the extent of it. Highway 17, one of the state facilities that you may or may not have traveled over to get here, clearly suffered very major damage, but our public agencies have been very able to respond to public facility damage. And furthermore, because of the weather that prevailed, both before and after the earthquake, we really were fortunate in terms of the extent of some of the damage.

I think there are really three periods that I would say we face in any kind of a disaster response situation.

And one of them is sort of the immediate response. It's what the gentleman just before me was talking about with you, at least when I was here.

There's been a sort of interim period where the immediate response has been put behind us, and we're trying to just get things back so we can start addressing longer-term rebuilding. And I would say we're in that period now.

And then the rebuilding, or long-term recovery period, which has yet really to begin or even be addressed in any significant way in Santa Cruz County, although we're starting to try to lay the foundations to work on some of those long-term issues.

I would say that in terms of our immediate response, while there were numbers of problems, we were, as a community, again, pretty well off. We had a response, both at the neighborhood kind of individual level, at the local government and institutional level, at the private-sector level, and at the state and federal level also, may I say, that really was, I felt, very gratifying, having lived through a disaster in the same position I'm in now, in the '82-83 season, that was not nearly so positive in terms of responsiveness.

Our interim efforts, again, I would give us pretty good grades, but we're beginning to have troubles. The City of Watsonville is really having troubles because of their unique housing problems, going beyond an — you know, immediate kind of response to shelter, which I think, again, was — with some bumps, came through pretty well — to some interim housing that — we don't have it yet there. And that's a big problem in Watsonville.

Again, in Watsonville, I think their economic development efforts are — may be a little bumpier than here in the north county, where the merchants are already putting up tents and are trying to get their economy rolling again. Public facilities — again, in both the — I mean, they're doing fine. And in terms of financing, of course, we expect public facilities are going to be 100 percent paid for.

The long-term issues of particularly housing and economic development, as I say, are major challenges. And I think the difficulty that we're going to face was the one we already faced in the special session of the legislature, where people really did not appreciate, it seemed to me, many people in the legislature, even those who were sympathetic, the extent and magnitude and longevity of this crisis for our community.

So, that's just some introductory remarks. And I would rather, you know, respond to specific kind of questions about "What happened on this?," or "What do you think about that?," because I know you have them. And why waste your time giving you my thoughts?

CHAIRMAN CLUFF: Thank you very much.

I'll start it out be repeating, for the other commissioners, but for you something new, and that is, one of the things that we're trying to focus on here is the decision process and how certain decisions are made to improve seismic safety. And out of that comes some level of risk that boards like yours have to make. There's, "Well, we've done enough; we can only afford so much, and that's a level of risk that we're going to have to take." So, we're trying to improve our ability to understand that process, and to make more effective decisions, and make sure the right people are informed.

Sometimes we learn — there was nothing that occurred in this earthquake that was a surprise to us, really. I mean, we knew the unreinforced masonry buildings were going to come down, we knew that where there was a potential for liquefaction, there would be. And thank God it wasn't an earthquake that lasted a few more seconds, because we could have had much more extensive liquefaction than in the small, localized areas that it occurred.

So, this was a good reminder — I use the word "good" in terms of looking to the future — that we have to be able to improve our understanding. The awareness is up now. The opportunity is here. What can we do to learn about the decision process with your board and so forth? How can we help you be more effective in what you have to do and so forth in improving seismic safety?

MR. PATTON: Well, I think our board specifically has been very concerned about seismic safety issues. We have taken it very seriously, we've mapped our seismic fault zones, we have rather elaborate geologic review procedures on building. At least the people who do the building don't like them — they're very inconvenient for them.

So, as to new construction and placing buildings in areas of possible seismic hazard, while we probably don't get an A+, we're above average, it seems to me, in terms of our responsibility about those issues, as to new construction. And I don't know that we're going to change. We're going to probably even get better on those issues, because it's been so dramatically shown to us how important those things are.

And we had a newspaper editorial, which you may or may not have seen in one of our local newspapers, saying, "Thank goodness the board of supervisors didn't follow the advice of one supervisor, who said, ten years ago, 'If people want to build, you know, on the mountains and let their house fall down the mountains, that's their problem.'" We have not taken that approach.

We have not had, very frankly, the money, on the public side, nor have we felt it appropriate to try to make the private sector come up with the money to go back and sort of, house by house, business by business, retrofit businesses to make them as strong as our current codes would require.

We did do the inventory process called for by — I've forgotten the number of the state law now that — where the deadline is January, 1990. We've already done that inventory in Santa Cruz County. Essentially, we found no buildings in the unincorporated area that met the criteria that would require us to deal with them directly. The City of Santa Cruz, City of Watsonville, those urban centers, had those kind of buildings, and they are the buildings that are no longer with us, by and large, and that killed people in our community.

And my own sense is, what we as a state could learn from this earthquake is that it is a prudent investment to mobilize the capital on those extremely dangerous buildings, to go back and make certain that they are, in fact, made as earthquake-safe as is possible. And we simply have to do that.

And I think that particularly when you think about places like the Hayward Fault and other faults in the Los Angeles area, where the fault lines and traces themselves go through urban areas, it is imperative that that be done. We're very lucky. I mean, our fault line goes through the mountains, and, as I say, we are actively discouraging any new development on those faults. Some of it took place many years ago, and we're not encouraging more.

But where you've got an urban area, where literally tens or hundreds of thousands of people are living right next door to brick buildings that are literally on the fault — some of our major public facilities like hospitals are on that fault — I do think that the state has to invest some money in that.

But, you know, the state was not very interested in investing money to the degree that we, at least, thought that it needed to to recover from this quake. And there was interest in the legislature about retrofitting things, and Mr. Katz and others from Southern California were concerned about freeway retrofits. Massive amounts of money are needed to do this, and the society is going to make a decision either to mobilize that money and to not spend so much on a current basis now and invest in safety for people in the future, or wait until the next earthquake kills people.

And you can certainly urge them to make that investment. I hope you do.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: I'm very pleased to see Chairman Patton make a strong statement on the matter of public safety, and I include here both publicly-owned buildings and privately-owned buildings exposed to the public, because we heard some very discouraging testimony from the University of California, no less, in this same series, wherein a decision was made at a high level to place people in buildings that, by their own definition, could collapse, were deemed to be dangerous, and yet this administrative level was deemed to be an appropriate decision.

So, I support your statement 100 percent.

MR. PATTON: Well, let me just give you a case study here in our community. There is a former school building, now a community center, which — actually, it was one of my main projects when I was first elected to the board, to turn an old school building into a community center — very beloved by the community, now called the Loudon Nelson Community Center, not too far from here, an old school building, a Spanish-style, beautiful building.

We were told, when we started having an inventory done in connection with some minor remodeling, that there were some very significant seismic hazards with that building.

The director of the center said, "Gee, you know, it's just — this is a big deal. I mean, we would have to spend hundreds of thousands of dollars, and actually close the center for upwards of a year to do this, and — you know, do we really want to get into that just because some engineer says that? Maybe we ought to drop this minor remodeling project and just go on with life."

And I think, to their credit, the county board of supervisors and the city council, who jointly own and operate that building, said, "Hey, we're shutting that building down." We kicked out senior centers, childcare programs, and community meetings that are vital to our community, at great inconvenience to them, and we did reinforce the building.

And it is unblemished after this earthquake, and it would have killed people if we hadn't done that. There's just no doubt about it.

CHAIRMAN CLUFF: Thank you.

Randy?

COMMISSIONER PESTOR: Yeah. I just wanted to remind the Commission too, is that there is no other local government in the state that has supported the Seismic Safety Commission's, you know, legislation than Santa Cruz County. And I think that's, you know, in large part, to Supervisor Patton.

And also, during our special session, there was nobody else there from local government that put in the time that Gary did. He was there day and night, from, you know, Wednesday night till Saturday night, and I wanted to thank him for that because —

MR. PATTON: I noticed you were there.

COMMISSIONER PESTOR: Right.

MR. PATTON: I noticed this gentleman was there. That night — it was night —

COMMISSIONER PESTOR: Right. Quite an experience.

Thank you.

MR. PATTON: Thank you very much. I appreciate you coming, again.

CHAIRMAN CLUFF: Thank you.

Next is Luther Perry and Mary James. They're with the Santa Cruz County Housing Authority. Mr. Perry is chairman.

Please come up to our table and share the microphone.

MS. JAMES: We need to do a little correcting.

CHAIRMAN CLUFF: Oh, okay.

MS. JAMES: I'm Mary James. I'm the executive director of the Housing Authority. It's an independent public agency.

Luther works for the County of Santa Cruz and is the chair of the Housing Recovery Task Force. I invited him this afternoon because I thought you would be looking at something far broader-ranging than a housing authority, so you have two for the price of one here. And maybe someday we'll work closer together than we do now, but right now we're from two separate entities.

CHAIRMAN CLUFF: Thank you. Go ahead.

MS. JAMES: Well, from the Housing Authority's standpoint, I don't have anything prepared. Let me explain just a little bit about how — what we do and where we do it.

We are the housing authority for the entire county and the four unincorporated cities within it. We are also, by contract, housing authority for Hollister and San Juan Bauttista. So, I don't know if you're interested in those areas as well.

CHAIRMAN CLUFF: Sure.

MS. JAMES: The earthquake affected us mostly in the fact we had 2,200 families plus — or 2,200-plus families that we assist in subsidized housing, either housing that we have built ourselves and own, housing we have financed private developers to build through tax-exempt financing, or our largest program, which is a federal rental subsidy program.

The housing we built and own, and our financed housing, which is all since 1980, came through very well — some water damage from sloshing toilets and water heaters and things like that, but no major problems.

Our Section 8 rental housing, in which tenants can go pick their own landlords and their own housing, for the most part uses the lower end of the housing stock, which is the older housing. And that, I'm afraid, had — at least we — so, to date, we have had 100 families that we were subsidizing that we've authorized to move and find something else.

Clearly, the major problem in the county is there wasn't enough affordable housing before the quake. And it's been exacerbated by it, and the problems of rehousing people, a tremendous — Red Cross and FEMA and the initial response agencies have come in and done fine. We, as a housing agency, are looking at the short-term and the longer term.

For us, short-term means rehab those rental properties quickly. Landlords are looking for their choices, and they're not seeing any. As a housing authority, we're very limited, because although the legislature passed some money, I know the federal government, HUD, has authorized some additional certificates — to use our term — and some other additional program money, it takes several months to get here. Even at the best of times, the paperwork just doesn't speed up.

Meanwhile, landlords are sitting with empty properties, and they have to make decisions. From their phone calls to me, some of their decisions are that out-of-town realtors are trying to buy the land under the house and rebuild a much more expensive dwelling. Even if the landlord doesn't sell, and he gets an SBA loan at 8 percent, he still has to raise the rent to pay back the loan.

I can't move fast enough, and I don't — that's my only frustration. I'm not sure it's your Commission's responsibility. It's just the nature of being a bureaucrat, and I've been one for twenty years.

The response from the state agencies was wonderful. As soon as they could get through on the phone, everyone called, HCD, state — everybody called and offered help. They didn't know what to help with yet, but the sympathy and the compassion was there, and the willingness to help. And that has followed through. Each week we hear from them. They are trying to help us.

Other than — that's all I have to say, and I would be glad to answer any questions.

CHAIRMAN CLUFF: Thank you.

Let's take questions for the first speaker.

(No response)

CHAIRMAN CLUFF: Well, let's have the second speaker.

Stay there. We may come back to you a little bit later.

MR. PERRY: On the assumption that no one else has yet done this, I'd like to take a moment to pass along some figures about what happened in housing as a result of the earthquake, to give you a sense of proportion about what a — what sitting in the bullseye of a 7.1 earthquake does for you.

The county has suffered destruction of about 590 dwelling units, and major damage on an additional 1,900. So, we have destruction on some 570, maybe a few more, major damage on almost 2,000 — 1,900 and still climbing. We haven't counted them all. Then, in addition to those, a couple of special problems: our downtown single-room- occupancy, residential hotels, all four of them, are knocked out, and it looks like either two or three of them will have to be — will have to be bulldozed, and one may be recovered.

We also have something on the neighborhood of 500 mobile homes off their foundations. And that mobile home population is almost entirely elderly.

Those are some kind of overall numbers, to put a human dimension on it. We never have been able to get an accurate count of everyone who has to be out of their house. People stay with friends and neighbors, people leave town. We can say that our peak shelter population was about 1,500 people, at the peak, and that includes the tent cities down in Watsonville, which were adopted as unofficial shelters. And we had public health nurses and sanitarians out there every day and treating them pretty much just like regular shelters.

Our best estimate is that we have something on the order of 3,000 people without homes. To give you a sense of how that might look percentagewise, those destroyed and major-damaged housing units correspond to about 3-1/2 percent of our entire housing stock.

In the Cities of Santa Cruz, Capitola, and Scotts Valley, the housing loss was relatively less, approximately one percent of their housing stock. In the City of Watsonville, it was about 8 percent, and in the unincorporated part of the county, where there was a wide variation, the average was about 4 percent.

Now, numbers like 1 and 4, and even 8 percent of housing stock, are not — they're not real big numbers until you put a little bit more perspective on it. In all parts of the county, our typical apartment and house vacancy rates, before the earthquake, were in the vicinity of one percent. What that means is, in the Cities of Santa Cruz, Scotts Valley, and Capitola, the number of dwelling units that are out of service is approximately the same as the entire pre-earthquake vacancy rate.

And, of course, there's not an even match between houses that are lost and ones that are available that are vacant.

In Watsonville, where we have one of our three really bad problems, in the City of Watsonville, the number of dwelling units off-line, the number of families out in the cold, represents something like 800 percent of the vacancy factor in that town. That gives about eight families looking for every vacant unit.

All the shelters in other parts of the county have been closed now, a month after the earthquake, except in the Watsonville area, where there are still almost 500 people living in shelters and tent cities, because there is no place for them to go, and we've been unable to mobilize temporary housing as fast as we would have liked.

Let's take a little bit closer look at how all of this comes to pass. What is the nature of the damage that leads to these very large numbers?

We have — that divides very neatly into three categories. In the Watsonville area, which is on an alluvial fan on the alluvial plain of the Pajaro River, and is also, a good portion of the town, located at or just below the 100-year flood level — to give you a sense of the topography and the soils — most of the housing damage occurred in wood-frame, single- and multi-family residential, with some damage coming from upper floors of masonry and block buildings.

But, in the Watsonville area, almost all — well, I shouldn't say "almost all" — the majority of the housing damage was among those older houses that are used by the low-income population. We believe that about half of the people who are out of a place to live in this county are actually in or very close to the City of Watsonville, and that the overwhelming majority of those people are low-income.

The stories that you heard earlier about people living two and three families to a house, people living in garages, that is very strongly true in the Watsonville area, and it is those buildings that took the heaviest damage. So, retrofit on older frame structures is a significant issue, and Watsonville demonstrates that in spades.

Also, in the Watsonville area, over half of the mobile homes that are off their foundations are in the Watsonville area. In most of these cases, the mobile homes are off their foundation so spectacularly that it's interrupted the utility service and has supports sticking through the floors of mobile homes. Yet people continue to attempt to occupy those, because they would rather live there than have to go into a tent or out into the cold.

One of the more frustrating things that we're having to deal with on the mobile home side of things is: isn't there some fast way that we could get these mobile homes restored to full, proper, safe service? Most of those mobile home owners have insurance, and I understand from people who are active in the mobile home circles, most of those insurance policies do have earthquake coverage, unlike the case on regular, single-family residences.

We're finding that we can't go in and offer major assistance with the mobile homes off the foundation until the insurance companies have gone through their process. After the insurance companies finish their piece, then the folks have to get FEMA inspectors out to do their part of it. And there's a significant delay involved in just the insurance and the FEMA red tape.

I don't know what kind of magic to offer, but if there are procedures or approaches or construction practices that can keep these mobile homes from being thrown off their foundations, that would be 500 units of housing, right there, that had significant to major damage — not very many destroyed — that we could be saving a lot of grief for a lot of people, and particularly for a very vulnerable population, the elderly population.

Watsonville, then, is one of our major areas, with a little sidetrack into mobile homes.

The second major problem are those downtown, single-room-occupancy hotels in Santa Cruz. Like almost every city in this state, those are older hotels, like the International Hotel in San Francisco, that are not — they're no longer economical for other purposes, and they're converted over for single-room occupancy, either among people who are one step above being street folks, or for older people who not only are on limited income, they're on poverty income.

These buildings are — some of them are unreinforced masonry. Some of them are concrete. Some of them are block construction. But they are all built to standards that are much older, pre-1952, in many cases pre-1933, and the level of damage that those hotels sustained was really quite profound.

I understand that San Francisco, while the Marina District was the hardest hit part of the district, when you look in other parts of the city, the single-room-occupancy, older, residential hotels are a very distinct group that were very hard hit. And you may want to consider that in looking into the experience in other areas.

How to handle that population, we have 400 people who, just like that, they have no place to live, they're in the fenced-off areas, the buildings are red-tagged. These are primarily elderly people, impaired folks, or people who have a history of mental or alcohol type problems. They were living in stable situations, and now suddenly they're just out on their ears.

That is overwhelming in this community. We have something like four people for every nursing home or care facility vacancy that we have in the county — an overwhelming problem of how we're going to help these people.

The third area, which is somewhat less heart-tugging, but no less severe, is in the mountain areas around the county. When you give those mountains either a good soaking or a good shake, everybody goes for a ski run. And we have buildings down in the mountains, scattered all over the county.

Chairman Patton had referred to some of the controls that the counties tried to put in place about building in seismically active zones, but the number three very large problem we face in this county is that we found new seismically active zones, and the nature of that seismic activity is such that the full impact will not be seen for up to two years.

Specifically, we do not have the local resources, nor has either the USGS nor the Corps of Engineers nor the state OES been able to come up with the necessary resources to do the basic geological investigations to determine the nature and extent of the seismic consequences.

We have enormous landslides, some of them a half a mile, even a mile across, that no one knew were there. We have one entire housing development that's in the process of trying to slide down the hill. We have people's wells that went from 80-foot well depth to 20 feet of well depth, meaning that the water is now saturated, right under where their houses are located. And we have grave concerns that we're going to see perhaps as many as hundreds of houses on massive landslides in the next wet winter, which might be this winter or, if it's not this one, it'll wait for yet another one.

How to — how to get a handle on the geologic hazards, the nature and the location of the geologic hazards, is really a formidable problem that is in front of us. And much of this work — not all, but much of it — could have been done in previous years, but the need to do that was not made apparent to — either to the local agencies or to the people.

I think we're probably going to have a few more believers on the strict line that we've taken on these seismic safety issues, on the geology, but we do know, right now, our situation is that we have hundreds of uninhabitable houses up in the mountains, that are uninhabitable because of the geologic conditions. If they were on flat ground, those houses would be just fine.

I'd like to take just one moment and run down a quick little tick-off list of some things that were mentioned by earlier speakers that I'd like to expand the geographic area to which they apply.

The planner from Santa Cruz City had mentioned the unanticipated enormous load on the Planning Department. In the county, as in the city, we have hundreds of requests for building inspections for people who are trying to figure out whether it's safe to be in their house or not, and we can't even get to all the multi-family residential ones, let alone the single-family places or the mobile homes. We're looking at literally months of workload to get the building inspectors out to look at these places to see if they're safe.

Some mutual aid agreements and some contingency plans in advance would be very helpful. We really didn't know that it would be this bad, and that's a message that we would like to send to other parts of California: it is truly awful.

We shut down our Planning Department for a month. We're going to be spending over 50 percent of our entire planning staff doing work that, in the beginning of October, we didn't even know that work would exist. And for the next year to two years, that's all we're going to be doing.

This business about the emergency period is very different for earthquakes than it is for any other kinds of emergencies any of us have seen. And I think one role that this Commission could play is to help the state OES and the federal FEMA and the other emergency response organizations understand that large earthquakes are very different in their impact than other kinds of emergencies, and the normal guidelines simply don't fit very well.

We are still having aftershocks with damage occurring. Three weeks after the earthquake, a major fracture showed up in a support member in the county governmental center, right in the middle of the Building Inspection Department. Right over their heads, this beam started to come apart, three weeks after the earthquake. We don't know what else might be going on down there, and we've had structural engineers crawling all over that place like flies. I think we'll be okay, but we can give you story after story of more damage that is still being discovered today, and every indication that for weeks to come, major damage will yet make itself apparent.

To talk about a 30-day emergency period for building demolition is entirely unrealistic. We will find — I'd almost bet a steak dinner that after Christmas we will find buildings that we thought were okay that are going to have to be taken down. And to have that handled by traditional means just simply isn't working well at all.

One last comment that I'd like to add — and it's really just — as an engineer in a former life, I'd like to note — I believe it is true that no one in Santa Cruz County was killed or really seriously injured by being inside an unreinforced masonry building and having it fall on them. But we had most of our fatalities because the perfectly sound building next door to the unreinforced masonry building had a wall tip over and come through the roof.

Now, I've never really heard anybody describe that issue quite the way I presented it, and I wanted to take this opportunity to offer that to you, that the old saying about, "Dive under the table, and don't run out into the street," we had people die in the street in front of unreinforced masonry buildings when walls fell. We had people who were — died and people who were seriously maimed by being in buildings next door to unreinforced masonry buildings. But inside the unreinforced masonry buildings themselves, not that many people got hurt, and nobody got hurt really badly.

And I think there may be some lessons there with respect to liability issues. And I think there may be some lessons there about who really has an interest in addressing those unreinforced masonry buildings. It may not be the building owner. It may be some other people who really have the true interest in that area.

Thank you very much for listening for a few minutes. I took longer than would be scheduled, because I think I could give you a quick summary on our housing situation, as distinct from the other issues.

If you have questions, I think we're prepared to respond to them briefly.

CHAIRMAN CLUFF: Fine. Thank you very much for that very articulate discussion and summary that will be very, very helpful to us, enhancing our record that will be widespread, in sending it out to a lot of people. And while it won't help you in your emergency recovery right now, it certainly will, in the long run, help the State of California and other municipalities that have to deal with these issues and, hopefully, won't have to face as many of these difficult items.

I was struck by the — what I would call high percentages — even 3.5, in my experience in looking at earthquakes, other than a place like Armenia, where we have overwhelming — we clearly understand that, but in the United States and a lot of developed places, even in Mexico City, the percentage of the building stock that was damaged was one tenth of one percent.

And yet, when you look at the individual structures, that is unacceptable. And how we balance this, other than statistics, is a very difficult problem. Statistically, you can say, "Well, a few people were inconvenienced and some people locally were affected, but so what? It was an acceptable risk for an area." But when it comes down to the difficulties you've described, it's not. It's not acceptable. We've got to do something about it.

MR. PERRY: I think there's a lesson here, that when you have a very strong earthquake and you are as close to the epicenter as we were here — and, of course, that means most of California, certainly the entire coastal section of California — is at risk in that — from that perspective.

The loss of housing units is indeed very much larger than anyone had led one to believe would be the case. And I think the lesson here in Santa Cruz is that it may be possible to identify specific housing situations that are at much higher risk than usual: the older houses, in liquefaction areas, the single-residency-occupancy hotels, and all those people up in the mountains. Those are very specific risk areas that are quite a bit different from just houses in general.

CHAIRMAN CLUFF: Questions? Randy?

COMMISSIONER PESTOR: Yeah. On the delays, as far as building inspections and plan checks and things like that, existing law authorizes you to charge fees. You know, it's basically a fee-based process. You can even charge private consultants to do that kind of work. And I recognize that San Francisco's having the same problem.

One thing that always comes to mind is, I wonder why — I know, in the short term, you're definitely going to have problems trying to get some staff, but because it is fee-based, and you're talking about a year or two-year delays and so on, why aren't you, say, quickly advertising for building inspectors, working with private consultants, and perhaps even increasing your fees for building inspections and plan checks, so that you can more quickly process these?

MR. PERRY: Well, you really have two questions there. One of them is, "Why don't we add staff?" The other one is a specific method for financing the added staff.

With respect to adding staff, that's something that the Planning Department is working on right now. It's taken, really, three or four weeks for them to understand the nature of the workload that's in front of them. Like I say, nobody told us what it's like after a big earthquake. Well, nobody else has really been hit, proportionately, quite as hard as we have. Even in Whittier or in San Fernando, it wasn't this bad, proportionately.

And consequently, you don't know. When the earthquake comes, you go, "Oops! 7.1 — that means we need 100 building inspectors," and put out the order form. Well, now maybe people know more about that.

There are plans afoot right now to bring in much larger numbers of building inspectors, and those plans will move forward in the near future. I know our Planning Department's looking at that, and Santa Cruz City is looking at it. I don't know for sure about Watsonville, but I believe they probably are.

COMMISSIONER PESTOR: Okay. And like I said, I can understand why, in the short term, you can't do that, obviously, so I recognize that.

The other thing is, I wanted to mention, on your recommendation on houses being braced and mobile homes being braced, one thing that we face in Sacramento on legislation like that, like Assemblyman Cortese's had bills that require houses to be braced and cripple walls to be reinforced, and we always get slammed by the realtors and by housing advocates that think that it's going to increase the cost of housing.

Similarly, every time there's legislation relating to bracing of mobile homes, it's the mobile home owners groups and the tenants groups that bring up the housing cost issue, that even if it's something that's going to cost $200 or $300, to brace a house, and — I just wanted to let you know those are the things we face in Sacramento.

We have been trying. And, hopefully, now some of the housing advocates and realtors are beginning to realize that $300 is really, you know; a good investment to save not only, you know, an investment, but a housing supply for, you know, low-income people.

MR. PERRY: To the degree to which we might be able to assist in that educational process, we'd be very happy to do that.

COMMISSIONER PESTOR: Great.

MR. PERRY: Lots of folks from Santa Cruz would.

I would add one little — this is just a gratuitous comment from a local government person who's had to stare down outraged people in order to try to do the thing that was going to do the best for the long run. Occasionally, we do run into those circumstances where it's necessary to do the right thing, and it can be really hard to do. If this is an opportunity, perhaps, to take some of those actions, I'd like to urge that it be done.

It's true that the impact on the real estate industry could be negative, temporarily. It's true that it could have an adverse impact on mobile home costs, temporarily. But when we turn around and look at the total cost of this disaster, just in this little county, and compare it to the cost of preventive measures, I think it's cost-effective. I think those numbers will become apparent.

MS. JAMES: I just — may I just comment as a housing advocate?

CHAIRMAN CLUFF: Sure. Go right ahead.

MS. JAMES: That perhaps next time you run into that problem, give me a call, because I know many advocates. Building affordable housing, 300 here and there, isn't the difference. It's thousands of dollars of subsidy that's needed. And I've never objected to anything, even school fees and other things that I know some private developers might object to.

COMMISSIONER PESTOR: Great. Thank you.

CHAIRMAN CLUFF: Bob?

COMMISSIONER McCARTHY: Mr. Chairman, just a very, very brief remark.

This is the first time that I've ever been aware that the problem of the single home built out of wood presented any significant problem, and we're — you know, we're — this is something new, and we might want to look into that just a little bit.

CHAIRMAN CLUFF: As I understand it, though, it's some unique circumstances, where the geologic conditions or something other thing is a controlling agent. Isn't that correct?

MR. PERRY: Well, certainly, the geology is a factor. There's no doubt about that. But — and by and large, the single-family residences that have been built, let's say, since 1952, and especially since 1960, fared far better than ones that were built in older times.

But we have — like with mobile homes, we have several hundred frame residences that came off their foundations. And of the buildings that have major damage, a significant portion of those — and I couldn't give you a hard number, but I could speculate numbers like a half, perhaps — the damage could have been kept absolutely minimum if we could have kept them on their foundations, or if the foundations hadn't failed. We did have a few foundation failures due to faulty construction.

But single-family residences, while there wasn't anything spectacular, like brick walls coming down, we have pictures all over this county of single-family wood-frame homes that are as flat as that pad, just laying there on the ground, flat. And normally, those conditions come about because of losing — you know, losing the foundation, and then having the thing twist all out of shape and fall down. If they could be kept on their foundations, it would make an enormous difference.

And in this county, when we finally get the counts done, I think we'll find that the number is in the hundreds, in a community that only has 90,000 housing units.

CHAIRMAN CLUFF: Well, I think it does underscore, again — well-sited, well-designed and -constructed wood-frame houses don't perform like this.

MR. PERRY: That's right. There's no doubt that those are the safest thing around.

CHAIRMAN CLUFF: So, there's nothing new here. I mean —

COMMISSIONER McCARTHY: Well, we've been telling everybody, "Go home and stay off the highway and you're all right," you know.

MR. PERRY: Well, it depends a little bit. The ones that live up in the hills, where they're on slopes, that's a geologic problem. Down in Watsonville, where there are the older places, we have age problems. But even in other parts of the county, we had house-to-foundation failures. And when that house-to-foundation failure occurs, it's major damage.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: We had some slides from Gary Griggs showing that, and there were clearly some very — very severe weaknesses, where the studs are simply toenailed to a sill plate, and where sections of buildings are merely tacked together, because they ripped apart clean. I mean, there was nothing that was continuous. If there had been a concrete building, we would have said it was clearly badly detailed. But these were wood buildings that were pulling apart.

And I — you know, I think that there may well be some construction practices allowed by codes that provide these weaknesses. And we've always thought that the standard framing techniques took care of that. And, you know, Gary's pictures, if those were code compliance buildings, clearly can have some major defects that I've never seen before.

MR. PERRY: I think his pictures in that are really illustrative of the kind of thing that you can see in moving around the community out here, and I think those are all real good issues to be addressed.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: Well, it occurs to me that it's something like this — you need to dramatize something a little bit. And the number of 8 percent in Watsonville, when it translates out to — what is it? — 3,000 or something like that? — in a state of 28 million, tends to get lost. And I think that percentage needs to be dramatized on the basis that if you extend it to Los Angeles, where this is going to happen too, we are now talking about a quarter of a million, at least, homeless. And what are we going to do with that?

MR. PERRY: If Los Angeles were to experience the same general mix of effects that we've had here in Santa Cruz, from, you know, an earthquake of similar magnitude and a similar kind of an impact, I have some concerns about whether the federal government could stay solvent. I mean, we're talking big numbers.

COMMISSIONER McCARTHY: Well, I'm not sure they are now.

(Laughter)

CHAIRMAN CLUFF: Further questions? Oh, yes. Dan.

COMMISSIONER EBERLE: Yeah. I have a little confusion, and maybe you can help me out on the emergency period — we also heard that in Watsonville. Is that a legislative period, or is it an administrative period?

MR. PERRY: I can't give you a conclusive answer on that. I believe it is regulation, not law. But the particular thing we're talking about comes under federal law. It's in — it's in the FEMA rules, and I believe it may not be legislative. I believe it may be regulatory.

But there are two emergency periods that are of concern.

One is the period during which FEMA will make eligible the demolition of a building, and that's 30 days. If a building has not been demolished within 30 days, FEMA makes the assumption that the building was not sufficiently in danger and was not sufficiently a public risk that they're willing to pay for the demolition of it. And that may be true with a hurricane or a flood, or certainly with a tornado; it is not true with a big earthquake.

The other one is that there is an automatic 60-day eligibility period for non-demolition kinds of applications. Under FEMA regulations, that 60-day period can be extended to be longer. The one that's really causing us fits right now is that 30-day demolition window, because nobody ever heard about that before, and FEMA never told anybody about it before. But then they're never had to finance demolition on the scale of what they're talking about in this county.

COMMISSIONER EBERLE: Has there been a request to extend that?

MR. PERRY: Yes. The county administrative officer, who's the emergency director for this area here, has filed a request with FEMA to extend that 30-day period. And to my knowledge, we do not have a conclusive answer from them. I'm not even sure that they know if they can do it.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes. You were mentioning about probably a couple of issues on education, one in terms of just public education about what had happened, and also in terms of developing public policy and effectively educating those that are involved in making public policy.

In terms of some of the Commission's needs in reference to the latter, is it possible — Mary James was saying that she would volunteer herself to testify and provide testimony to what was articulated here today, but in addition to that, we do have troubles in terms of other areas related, which may involve some of the mobile home people, mobile home owners.

Senator Alquist is going to carry a piece of legislation on critical occupancy buildings, which would be buildings that occupy in excess of 200 people, which, generally speaking, would be office buildings and low-income apartment buildings as well. And we would like to know, for the Commission as well as probably for Assemblyman Cortese and Senator Alquist, to get a few names — not a long list of names, but at least some resources of which we can play that part of education, both legislators as well as — I guess a good example is, following the San Fernando earthquake, the director of Olive View Hospital has been on a tour, for about eighteen years, in articulating the need for hospital seismic safety issues. And I think that would be real helpful, on both the short term and the long term.

MR. PERRY: In terms of developing such a list, we certainly would be glad to help with that. A good way to begin would be, after you finish this round of hearings, or at an appropriate time, if you can contact me, I'll be working with the county administrative officer and with the city managers and see if we can't build up a list of, you know, half a dozen or so folks who could be available to assist in that area.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much again for coming before our Commission. You've provided some very valuable information.

MR. PERRY: Well, thank you for coming down here so soon after the event to listen to what we have to offer.

Thank you.

CHAIRMAN CLUFF: Thank you.

We do have one additional agenda item or spokesperson, David Steeves. You've heard his name mentioned in previous testimony today. He is the former Santa Cruz building officer who we heard commended highly for his efforts and a lot of things that he accomplished. Those buildings that were approved under his program performed excellently.

We'd like to take the opportunity to welcome David to sit down at table and use the microphone to tell us your story that might be helpful to us as a Commission, and those who read our transcripts, to learn from what worked, what didn't work, and what we can do better.

MR. STEEVES: Well, thank you. I appreciate the opportunity to speak to the Commission.

As you said, I was the former building official, and during the time I was the building official, I did put one ordinance together, a seismic retrofit ordinance for single-family residences. When you made an addition or alteration to your structure, we required you to do one percent of the valuation in some seismic retrofitting. We had a little cookbook list of people — things people could do.

That was very well received, and thos who, you know, took out permits were happy to know that there were things they could do to stabilize their home.

But when I attacked the commercial downtown area and all that, it became an entirely different picture. Unfortunately, it's difficult for a community, the politicians in the community, to take on such a vast, scary role as to pass an ordinance where it's going to require people who own larger buildings to do some sort of retrofitting. My ordinance was not a retrofit ordinance; it was just a seismic hazard reduction, which was required by the Senate Bill 547.

But it became a political thing, because no politician's going to take that sort of thing on their back and pass it, because it's a very unpopular thing. The only way you can get a local community to have ordinances to protect the population — and it is a public safety we're talking about — is for Sacramento or legislation to mandate that they do it. Then that puts the onus on your backs rather than on theirs. And that's, unfortunately, the way things work.

My ordinance, like I say, was a hazard reduction ordinance, but everyone who saw it really didn't understand it, and I was not given the opportunity to explain it to the city council nor the business community and that. They felt that, you know, "Here's an ordinance — we're going to tear out all the buildings," or "We're going to" — most of the tenants in the buildings are — don't own the buildings, and so they say, "Well, it the owner has to do something, the cost is going to trickle down to us, the rent's going to be increased, or we could have disruption of business."

But that was not the thrust of my ordinance. The ordinance was to, like I say, reduce hazards, and it could be very well done, like any remodel in the store, by barricading part of it, and business as usual on the other side — normal construction type mode.

But it — the business community did not, you know, relish the forwarding this ordinance, and so it was killed.

We have another problem here in Santa Cruz, and that's our historical tradition. You know, they're out to save every building they can. Well, there's very little you can do with the unreinforced masonry buildings. So, they have passed many, many planning ordinances that make it almost impossible to demolish a building in our downtown area.

It's a very long, cumbersome type thing, where we have hearings and appeal periods and, you know, we're talking 120 days, 180 days, and all that. And then they want to salvage parts of the buildings. They think that the public should be able to go in there and salvage portions of the buildings.

Well, no property owner is going to allow someone in there walking around in his building tearing things out of it, because he's liable. So, you know, it's a sort of a contradictory type thing that we have here, so that, unfortunately, it made it impossible to demolish any buildings, or even do a major retrofit on the building — a person would have to have — increase the floor area of a building or do a major remodel, when we can have — you know, have some seismic evaluation, engineer's study and all, done to it.

We had a typical situation. We had a school building that the school district abandoned because the — it didn't meet the current seismic requirements, and it was not cost-effective. So, they just abandoned it, because the school enrollment didn't merit putting that kind of money in it. So, the city and county together bought it, and it's a big — you know, big political flag-waving thing — we got a community center out of it.

But I tried for years to get them to do an engineering study on the building, but I could not get them to do it, until they came in to get a permit to put an addition on the building and some remodeling. So, when that occurred, then I required that they do an engineering analysis on the building, which they did, and they found the thing was totally unsafe. The roof was not even connected to the walls, there were no lateral shear walls or anything in the building, and it was totally unsafe.

And yet we had nursery-school kids in there, preschool, senior citizens, and all that — a much more hazardous group in this building than normal kindergarten or, you know, grammar-school kids. So, I felt very bad about saying, "We have to close the building down," because it was just before Christmas and they had all sorts of events planned. But I couldn't ignore the engineer's report that the building was unsafe. They posted it and they shut it down, and did a major seismic retrofit on it, and they used it as a shelter all during this earthquake, and it worked. We did a good seismic retrofit on it.

And it just shows that you can take buildings and do some, you know, structural work to them, and they are safe, or reasonably safe. So, like I say, if legislation can, you know, mandate that local communities do a program of some sort for seismic retrofitting, then we can get it done.

But I talked to 30 building officials that were up here after — the day after the event and all that. Throughout all of California, you know, every one had the same problem. They cannot get an ordinance — seismic retrofit ordinances passed. It just gets put aside, or killed, or any other reason you can feel, but they cannot get one passed.

So, I think that something needs to be done to — you know, to accelerate the passage of ordinances. There area a lot of good local ordinances. I took mine — I modeled it after the L.A. and the Palo Alto, Santa Rosa, and the Long Beach ordinances, and took parts that were pertinent to what I needed.

I sent the Commission a copy of it, and I sent BAREPP a copy, and they all thought, you know, "It's fine, great; go for it." Well, when I went for it, I got cut off at the — at the knees.

And I just couldn't believe that politics should play such a greater part, a greater priority, than public safety. I mean, we're charged with public safety, as any government official, you know, whether it's elected, appointed, or hired or what have you. Our first priority is public safety. And we are charged with that responsibility, and we should act in that manner.

Well, I think that pretty much covers what — you know, you've heard a lot of what's happened around here, so I don't need to repeat any of that. I am working down in Watsonville right now, putting together a program to get people back in their yellow-tagged houses. They have something like 1,200 homes down there, so we're taking lists of people in the shelters, and we inspect those homes and get them back in. There may be some minor repairs they have to do, but we're working on getting people back in those houses that are yellow-tagged.

Well, thank you for listening. I won't keep you any longer. I know you're probably waiting for dinner.

CHAIRMAN CLUFF: We'd like to ask you some questions.

MR. STEEVES: Sure.

CHAIRMAN CLUFF: You're a wealth of information, and I think your message is a very important one. I think, from a personal point of view, and I hope I speak for most of the commissioners, that the behavior you described is inexcusable. Those people should be held accountable. And we'd like to do what we can to make that happen.

Bob?

MR. STEEVES: That's great.

COMMISSIONER McCARTHY: Did they tie the can to you?

MR. STEEVES: Pardon me?

COMMISSIONER McCARTHY: Did they fire you?

MR. STEEVES: No. No, I retired after that.

COMMISSIONER McCARTHY: Oh.

MR. STEEVES: I was up for retirement anyway,
and —

COMMISSIONER McCARTHY: Well, you — okay. You made the remark that — you know, about politicians. We have a city councilwoman that sits on this board that was instrumental in causing the City of Los Angeles to adopt a retrofit ordinance.

And it's been my observation, sitting on this Commission, that the part of the state that has suffered earthquakes recently has already adopted ordinances. In other words, there's a higher percentage of cities in Southern California who have responded. And it's my assumption that after this earthquake is — the experience of this earthquake in Northern California, that the same thing will happen here. I don't think there's any difference in the people at all.

But you may — you may want to get a sign on your bumper that says, "I told you so."

(Laughter)

MR. STEEVES: You know, I've waited to do that.

COMMISSIONER McCARTHY: Well, yeah. No one appreciates being reminded, you know.

MR. STEEVES: No, right.

COMMISSIONER McCARTHY: But I think that you can have more hope than you've expressed here, because really —I think, in percentage of the population of the state, over half the state does have a retrofit ordinance now. Right? Isn't that — if you include Los Angeles and Long Beach and the Southern California communities?

MR. STEEVES: I don't think there's over five jurisdictions that have seismic retrofit ordinances.

COMMISSIONER McCARTHY: You know, but — you know, it's —

EXECUTIVE DIRECTOR TOBIN: There are 34 jurisdictions now with programs.

COMMISSIONER McCARTHY: But some are pretty large jurisdictions.

MR. STEEVES: Yeah.

EXECUTIVE DIRECTOR TOBIN: But it's less than half.

COMMISSIONER McCARTHY: Is it?

EXECUTIVE DIRECTOR TOBIN: Populationwise. If you — especially if you take Los Angeles, those numbers out of it, it's —

COMMISSIONER McCARTHY: Well, you can't take Los Angeles out of it.

EXECUTIVE DIRECTOR TOBIN: No. That I realize. But if you take the other 33, the numbers are relatively small.

COMMISSIONER McCARTHY: Yeah. You know, I don't think there's any difference between Northern and Southern California, other than — you know, Northern California, until this earthquake, hasn't had an earthquake in recent times.

CHAIRMAN CLUFF: Bob, it's — while a lot of progress has been made with respect to final acceptance of ordinances in some communities, and we applaud them very loudly, they haven't yet done anything. I mean, that's the sad part of it. I mean, yes, some progress, but we need to make some giant steps —

COMMISSIONER McCARTHY: Yeah.

CHAIRMAN CLUFF: — and we can't wait. I mean, we came close to losing thousands of people, thousands of people.

COMMISSIONER McCARTHY: Do you think the state would actually act on this? You know, we mentioned that about a year ago.

CHAIRMAN CLUFF: No. This might be an opportunity.

COMMISSIONER McCARTHY: The state — the state has a certain amount of reticence on its part, also, you know.

CHAIRMAN CLUFF: Certainly.

COMMISSIONER PESTOR: I think — if I could
just —

CHAIRMAN CLUFF: Yes.

COMMISSIONER PESTOR: — because, in going through this, and not just on SB 547, on Senator Alquist's bill, but on a lot of other legislation that I deal with, as far as giving local government — you know, having some requirement, but nevertheless giving local government some flexibility to implement it, and they always ask for that —most local governments don't like the state telling them what to do — and so, in a lot of legislation, what we do is we have some requirements, but give them the flexibility to implement them.

And I think that you're a case in point. You were saying that in the Santa Cruz ordinance, you kind of took some things from Santa — from Santa Rosa, some things from Los Angeles, to fit this situation. And I think that's one thing that came through clearly on SB 547, is the conditions are different. Certainly timing is an issue, economics, whether or not the incentives will be in place. You certainly don't have — all the contractors in the state, if everybody had to do it in a year, you don't have enough contractors to do that, nor do you have the resources from banking institutions to cover that.

Some local governments may want to change the use, change the occupancy — there are a lot of things in the legislation that offer different alternatives. And I think that when that bill was going through, certainly the legislature had the intent for local governments to implement that by saying the mitigation measure has to be to the Seismic Safety by January 1, 1990. But as far as implementing it, it gave local governments that flexibility.

And so, I think the state really has gone as far as it can on this, except maybe including other types of construction, whether it's tilt-up and some of the other things that's the concern of the Commission.

One thing that, on a lot of legislation in Sacramento, whether it deals with growth issues or the housing issue, we start throwing in what we call carrots and sticks. That may be one way of approaching this.

Certainly FEMA has talked about — they have it in their regulations that after they do a mitigation program for a disaster, that if you don't begin to implement that, that can jeopardize the 75 percent that you get from FEMA. OES, from what I understand, has not finished the mitigation plan after the Whittier Narrows earthquake, so I think we're damn lucky we're getting the 75 percent from FEMA on this disaster.

But if we don't prepare that mitigation plan, which will probably take a lot of the Commission's five-year work plan as part of the mitigation program, and if this state doesn't begin to implement that, and local governments, we're very likely that we won't get the 75 percent from FEMA.

And maybe what the state needs to do is say, "Okay, local governments, if you don't begin implementing the SB 547 program over, say, the next five- or ten-year period, even when we give you some incentives, we're not going to pick up your 25 percent local match," which the legislature did two weeks ago. Maybe that's the kind of stick that the state will have to do.

Same thing with safety elements of the general plan. If you don't do that every five years, you're not going to — the state will not pick up your 25 percent share of the match for FEMA money. And, you know, maybe that's something the Commission can consider too, are some of these carrots and sticks.

MR. STEEVES: Well, that's one of the things that killed this thing, was the city attorney came up with the opinion that they didn't have to do a mitigation. They could have a mitigation plan, but they didn't have to do anything till January of 1990, so you know we're going to wait — they still haven't done it. You know, here it is, November of '89, and they still haven't done it.

EXECUTIVE DIRECTOR TOBIN: Do you have copies of any of these materials still? I mean, like the city attorney's report and that sort of thing?

MR. STEEVES: Right. Yeah. This iw for your information anyway, but even — even being proferred by this Commission, is a letter to the mayor —

(Mr. Steeves hands documents to the Commission.)

MR. STEEVES: — this Commission sent a letter to the mayor telling them to get their act together and start doing it. And here's where we — he's saying that we have till January of 1990, so why jump the gun? Why do it before we have to?

CHAIRMAN CLUFF: Well, they got their answer from someone on high.

(Laughter)

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: On this mandating question, you're retired and free to say what you think. Let me just ask you, do you think that maybe the state, the legislature in Sacramento, ought to consider a direct mandate to some level of seismic retrofit, in effect, just bypassing local government, or do you think the state should mandate that local governments adopt an ordinance that, in turn, has some teeth in it?

Do you have any — I'd just like to know what you think about those.

MR. STEEVES: Well, I think — I think that, you know, if it was part of Title 25, that the local jurisdictions should have to adopt Title 25 and use it, you know. Most jurisdictions, you know, use it as sort of a catch-can thing of, you know, the Title 24 and Title 25 both, you know — no one did the handicapped stuff until they really got on everyone's case.

And if the — in Title 25, under earthquake, in their seismic section there, put it in there that it is a mandate —

COMMISSIONER SCOTT: Okay.

MR. STEEVES: — that they do it.

COMMISSIONER SCOTT: Okay.

MR. STEEVES: And I think that's probably the easiest way of doing it. You don't have to go through the little government lobbies to accept it. You're doing it through the building department. That's who is responsible for it anyway.

COMMISSIIONER SCOTT: But you'd basically put the requirement in at the state level?

MR. STEEVES: Yeah.

COMMISSIONER SCOTT: Yeah.

MR. STEEVES: Right. It would have worked the same as the requirements of Title 24. Now, all of a sudden, everyone's doing handicapped stuff, everyone's doing energy stuff, because it's a mandate. We have to do it.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Well, thank you very much, David, for coming over and talking to us.

MR. STEEVES: Thank you. I appreciate your sitting here.

CHAIRMAN CLUFF: Your testimony will be of great value to us. Thank you very much.

MR. STEEVES: Thank you.

CHAIRMAN CLUFF: This concludes all of the speakers, unless there's someone else out there that wants to come up.

I think we're left with our staff, and one or two hangers-on.

EXECUTIVE DIRECTOR TOBIN: And, Mr. Chairman, one thing I'd like to report is that we will be checking overnight with OES about the 30-day FEMA regulation that's been waived in previous earthquakes. And, you know —

COMMISSIONER SNYDER: Has that been waived previously?

EXECUTIVE DIRECTOR TOBIN: It has been waived previously, and we will see if we can get something going on that by tomorrow, and we'll hear tomorrow as to what the situation is.

CHAIRMAN CLUFF: So, the hearing's adjourned until tomorrow at 8:30.

(Thereupon, at 6:58 p.m., the hearing was
concluded.)

## —o0o—CERTIFICATION AND DECLARATION OF TRANSCRIBER

I, Cynthia M. Judy, a duly designated transcriber, do hereby declare and certify that I have transcribed Tapes 1 through 11, which were recorded at the Seismic Safety Commission's hearing on the Loma Prieta Earthquake, which was held in Santa Cruz, California, on November 14, 1989, and that the foregoing pages constitute a true, accurate, and complete transcription of the aforementioned tapes, to the best of my ability.

Dated: December 6, 1989

CYNTHIA M. JUDY
Transcriber

# California Seismic Safety Commission
## Loma Prieta Earthquake Public Hearing

## San Jose

November 15, 1989
Board Chambers
County Government Center
70 West Hedding Street
San Jose, California

**Loma Prieta Earthquake Hearing**
San Jose
November 15, 1989

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## PROCEEDINGS

CHAIRMAN CLUFF: We'd like to convene the continuation of the Seismic Safety Commission hearings on the Loma Prieta earthquake, and we will continue as we have for the past several days.

And before we get on to our agenda, Mr. Tom Mounts would like to welcome us on behalf of the mayor.

MR. MOUNTS: Good morning. I'm kind of pulling double duty today. I've got a brief presentation later on the City of San Jose's experience in the October 17th earthquake. As the Chair mentioned, I'm Tom Mounts. I'm the emergency preparedness manager for the City of San Jose. But at this point, I'm representing the mayor and city council in welcoming the Commission, and all of the speakers who will be coming on later in the day, to San Jose, although, technically, we're a County of Santa Clara facility.

Unfortunately, the mayor and vice mayor were both previously committed for today, and asked me to give some opening remarks. I'll keep them brief, because I will, hopefully, fill in some more detail later on.

San Jose fared well, very well, comparatively, in this quake. Whether it was geology, luck, or just some very good planning, we've been pretty much business as usual since the quake. But I want to take this opportunity to take a little bit different look at our experience.

As a city manager form of government, cities often refer to the administration as the driving force in emergency management, and that is true for San Jose. However, in this quake, the mayor and the council took some very appropriate and valuable lead roles. And because the mayor couldn't be here, I wanted to take advantage of this opportunity to mention those.

As media contacts, as contacts with other jurisdictions, their help was very well received. In addition, the mayor took a lead in setting up a private relief effort, with a warehouse of food, bedding, clothing, and well over $350,000 in cash donations. Utilizing City resources, many deliveries were made to Santa Cruz, to Watsonville, Los Gatos, and up into the Santa Cruz Mountains. The mayor of San Jose was one of the first — for lack of a better word — "outside" persons to tour Santa Cruz and Los Gatos, and was there to offer our help.

Since that time, the mayor and council have offered to work with the other jurisdictions, whether they were affected by the quake or not, to share our experience, what we did right, or had done right in preparation and mitigations, and what we can improve on. And that's why this meeting is important to the City of San Jose, and while we want to welcome you, again, hoping that the outcomes will be valuable in helping meet the challenge of similar events.

CHAIRMAN CLUFF: Thank you very much, Tom. We appreciate the opportunity to meet with various decision-makers here in the San Jose area.

We have a very full agenda, which I believe is available to everyone. And during the opening remarks, I'm going to take the opportunity to add an additional item, which we will start with, and that will be a presentation by Mr. Dick Volpe, who is a consulting engineer, and has been working on the dams that were in the epicentral region, and has prepared a summary of what happened to the dams, what events have taken place since the earthquake, and everything else that leads to the improvement or the evaluation of seismic safety of our dams.

So, Dick, if you could come up to the microphone, let me just briefly, in a couple of minutes, explain what the purpose of these hearings are. The Commission is looking for written and oral testimony that will be entered into the record that will be part of our proceedings that may be used by many others, in terms of understanding the issues that are associated with earthquakes and what we can do to improve levels of seismic safety.

So, we appreciate your, on short notice, being able to come and speak to us, and we'll have you make a short presentation and tell us what you found and what's going on, and then we'd like an opportunity to have the commissioners ask questions.

MR. VOLPE: Well, thank you, Mr. Chairman.

Good morning, ladies and gentlemen.

At Mr. Cluff's request, I prepared a very quick summary of the response of several dams as a result of damage that occurred during the October 17th Loma Prieta earthquake.

(The following remarks were accompanied
by a slide presentation.)

MR. VOLPE: There are approximately 100 dams that are located within approximately 60 miles of the epicenter of that event, and I wish to just express the response of the engineering community to evaluate the safety of these structures.

Could we have the next foil there? Thank you.

This is a shot that I think probably some of you have seen, showing the epicentral distance.

Do we have some kind of a pointer, Mr. Chairman?

Well, perhaps we can just point things out here —if you could just slide that up a little bit, we can see the — there we go — we can see the approximate epicenter of the event, approximately 10 miles east-northeast of — east-northeast of the City of Santa Cruz. And from the south end of the bay, in Santa Clara Valley, we're looking at approximately 15 dams, to Santa Cruz, that were directly impacted by the earthquake.

One of my clients is the Santa Clara Valley Water District, and I'm essentially here at their behest, to share with you the investigations that occurred at a number of those dams.

For those of you that may not be aware, the Santa Clara Valley is ringed by a number of dams that were generally constructed back in the 1930's to 1950's. And the water, through precipitation, that those particular structures impound, is stored in those dams and released very slowly to recharge the groundwater system from which San Jose draws its drinking water. So, the entire Santa Clara Valley area is managed with regard to those water resources, and, of course, we are very concerned about the overall stability of those structures.

The dams, of course, have been impacted by earthquakes in the past, but as all of you know, this is the largest earthquake to have hit Northern California since the great earthquake of 1906. Now, the majority of the dams that we're looking at here, of course, have been constructed since 1906, and therefore, this is one of the first major tests of the overall stability of those structures.

Of the 100 dams that are impacted within a distance of about 60 miles of the epicenter, there are approximately 12 of those dams that were very strongly shaken, and only 9 of the dams actually suffered a measurable or observable damage to them.

I would like to point out to the Commission that several engineers, myself included, have gotten together and written a rather quickly drafted article for the International Commission on Large Dams, of which the United States has a committee, the United States Committee on Large Dams. And that article simply summarizes the nature of the damage, a little bit about the earthquake, and this is simply to share the experiences that those of us who actually investigated the damage, to share that information with our colleagues.

And I would like to give a copy of this, Mr. Chairman, to the Commission so that it can be perhaps made a part of the public record.

Can we — well, before we — before we shift from there, it's very important to understand that the safety of dams is, of course, a major concern, not only to the engineering community, but to various state and local agencies. And here, with this simple little map, of course, you can see the impact and the concerns that we have from a dam safety standpoint, because we are faced with potential movements on both the San Andreas Fault, and then a number of dams located in the East Bay certainly have a potential of being of impacted by both the Hayward and the Calaveras Fault.

I've heard the Chairman speak on the record in the past few weeks about the potential for movement, a major earthquake, occurring on the Hayward Fault. And I would simply like to suggest to the Commission that the number of dams that we have, that potentially can impact hundreds of thousands of people along that fault, is a very, very real threat.

And on the opposite side of the coin, I think it's important to also know that we're not simply standing by waiting for an earthquake like this to occur. The owners of these dams, and the California Division of Safety of Dams, through its Department of Water Resources, is taking a pro-active role in investigating the overall seismic stability of these structures, and have taken proactive measures to stabilize these dams before such an event were to occur.

But nevertheless, there is a certain element of concern, certainly because the overall stability of these structures, until October 17th, had not been tested.

Could we have the next and final view foil?

Let's just kind of start at the top, and we'll work our way down. This essentially is a summary of what is contained in the article that I referenced that will be published in the United States Committee on Large Dams newsletter. And what I have done here is simply summarized the performance of dams closest to the earthquake that actually were damaged.

I apologize for the quality of the foil, but I trust you can read along with me.

I won't go through every one of these structures. I just simply want to point out to you that what we're looking at are major structures. Dams certainly pose a major threat to the surrounding community, simply because, in the event of a failure, we're looking at the potential catastrophic release of millions of cubic gallons of water. And the erosion and potential damage that can be caused by that, I think, is well known by most of you.

The closest dam to the epicenter of the October 17th event was the Austrian Dam, owned by the San Jose Water Company, located approximately 8 miles from the epicenter. It was built in 1950 and is a rather large dam, 185 feet high.

And one thing that's very important to understand is that of the various materials that dams can be constructed with, those options perhaps being earthen material, rock material, or concrete gravity or arch dams, I think it has long been held by the engineering profession that an earthen dam certainly possesses a greater degree of flexibility with regard to its potential for withstanding the violent shaking associated with earthquakes. That is not to say that there is an inherent weakness in other types of material, but the fact of the matter is that if earthen material is properly used in the construction of a dam, it does present and provide a significant degree of stability, as a result of this earth-shaking.

As I point out, with Austrian Dam, 185 feet high, this dam probably has experienced, as far as modern earth dams is concerned, probably experienced perhaps the heaviest shaking in recorded history, and we see what the nature of the damage was. The damage was extensive, but the dam did not fail. There was cracking to a depth of perhaps about 10 feet in the embankment. It actually settled about 3 feet, and one side of the dam actually moved over a foot downstream.

Now, what does this do? There have been questions raised to the fact that the majority of the dams, as a result of our recent drought conditions, of course, were relatively — the reservoirs behind these dams were relatively empty. And the question is, what would the response of this dam have been had we been looking at full reservoir conditions? These are questions, certainly, that will be evaluated in the immediate near future by the engineering profession.

My supposition would be that we still would not have perhaps seen a catastrophic release or failure, but it is possible that the full reservoir could have exacerbated the damage that actually occurred.

Particularly at Austrian Dam, San Jose Water Company is to be congratulated. They — they have actually been working, literally, around the clock, seven days a week, to repair these damages, the reason being, of course, that we are looking at winter months immediately in front of us, and we were quite concerned about the potential overall stability in the event that we were to get a 20- or a 30-year rainstorm and the reservoir began to fill. What would those water loads have done to us?

The current status on the repair of Austrian is that there has been over a 20-foot removal of material over the entire crest area, not only to continue to explore the cracking, but actually, then, in the replacement of those materials, to repair that structure. And as of yesterday, I believe, they have essentially completed that portion of the repair. So, Austrian Dam is essentially almost ready to be back in service.

Could we move that up a little bit, please?

Guadalupe Dam is owned by the Santa Clara Valley Water District. It was constructed in 1935, and that was an era when there were a number of dams actually constructed in the Santa Clara Valley. It too is an earthen dam, and it has a concrete facing to protect against erosion on the upstream side of the dam. And the concrete facing was — was cracked and damaged, but is reasonably easy to repair. You can see that it had a settlement of approximately 7 to 8 inches, and also, that particular structure had substantial cracking of a buttress that was placed on the upstream side of the dam, back in about 1950, I believe.

These — the cracking of these dams has been thoroughly investigated by a team of engineers and geologists, and the repair for all of the Santa Clara Valley Water District structures has been presented to the State Division of Safety of Dams, and has been approved.

I think I might want to break here, for just a second, the train of thought, to comment on something that I thought was very important.

In our presentations to the State Division of Safety of Dams — well, let me back up just a moment.

For example, the Santa Clara Valley Water District has an earthquake emergency action team, and that — or plan, and that particular plan is implemented the moment a major earthquake is to occur. People do not need to have their marching orders; they have them well before the earthquake occurs. And every dam in the system is assigned to a particular technician, who either works or lives in the immediate vicinity of that particular structure, the thought being that in the event that there's any disruption to public roads and that sort of thing, that we need to have the ability to get out and inspect these structures very quickly.

As you know, the earthquake occurred about 5:04 in the afternoon, and by 6:15, simply 75 minutes later, the majority of these structures had already been inspected, and the district was aware of the types of damage that had occurred. I think this sort of an emergency action plan is extremely critical.

However, the failure occurred on the state end of the spectrum, and that was that because of downed telephone lines and the inability — excuse me, not the downed telephone line per se, but the inability to communicate by telephone — our state counterparts were not able to contact the division, and therefore, they were left hanging as far as their understanding and knowledge of the overall response of the dams in the South Bay area.

I think it's extremely critical for the Commission, and I would strongly urge the Commission, to evaluate these emergency communication lines, such that, in the future, those agencies that need to communicate to each other during these settling times can do so, in a manner that allows one to communicate and find out exactly what's going on.

This was, I believe, terribly frustrating to the State Division of Safety of Dams, who, incidentally, was down the very next day, flying over these sites by helicopter. But had they known that evening that our dams were in reasonably good shape, perhaps some of their concerns would have been alleviated.

So, I simply suggest that the Commission pursue, and to the degree that that can be remedied, I think it would be best for everyone.

Well, I don't think we need to go through every one. Perhaps, if we could slide it up a little bit, I'll point out the response of Lexington Dam.

Lexington Dam was located about 14 miles from the epicenter. This is a major dam, nearly 200 feet high, just south of Los Gatos, for those of you who may not be familiar with its location. And once again, as a result of the reservoir being very low in Lexington, we were able to see all of the damage that occurred, and the very interesting response at Lexington Dam is that the cracking, really, on that particular structure, was not associated with the dam itself, but rather, with the abutments. There was major cracking, to depths of about 6 to 7 feet on the sides of the dam, where it rests against the valley abutments.

We are currently repairing Lexington Dam. The repair work actually started yesterday, and probably will take on the order of about two weeks to complete.

I might point out that the crest acceleration at Lexington Dam and at Anderson Dam, two dams in the Santa Clara Valley Water District that are instrumented, we had a crest acceleration of approximately 0.45 g on the crest of Lexington Dam, so it obviously took a very, very severe shaking.

Anderson Dam, which is the largest of the south Santa Clara Valley area dams — in fact, I believe it's really second only to — well, its state ranking is probably the second or third highest dam — you can see, 240 feet high, and it sustained the Loma

Prieta earthquake with just very, very minor cracking on the crest of the dam. It — of all those dams up there, it is the only dam that is not entirely made of earth materials. It actually has large rock in the upstream and downstream section, with a center portion of clay.

Mr. Chairman, that essentially summarizes what I wish to contribute this morning. I think it's very important that the general public be aware of these large structures, and, obviously, they have every right to be concerned about their overall safety.

I think the Loma Prieta earthquake will teach us a lot about seismic safety, but the fact of the matter is that we have not simply been standing by. We have taken a proactive state with regard to the investigation of these structures, and we're very pleased that the structures came through with relatively minor damage.

Thank you.

CHAIRMAN CLUFF: Thank you, Dick.

Let me just re-emphasize the last point that Mr. Volpe made, and that is the very aggressive program that the owners of dams, as well as the Division of Dam Safety, has.

Immediately following the 1971 San Fernando earthquake, the spectacular engineering failure of the lower Van Norman Dam that did not release the reservoir, miraculously, led the dam design and building professions to totally re-evaluate hydraulic fill dams and all embankment dams. And because of those activities, I think I can say that every one of our hydraulic fill dams in the State of California has been strengthened or replaced. And all of the dams have been completely and thoroughly re-evaluated for their seismic safety.

And I think, because of that, we are seeing good performance, and we expect good performance because of the very high caliber of the review process of the Division of Dam Safety.

MR. VOLPE: Yes, I would agree with that, Mr. Chairman. The one major hydraulic fill structure in the San Francisco Bay Area, in fact, the largest hydraulic fill structure in California, Calaveras Dam, located south — or, excuse me — east of Milpitas, also received a very strong shaking, but there essentially was no damage reported whatsoever at Calaveras Dam. And it — as you pointed out, Mr. Chairman, it was one of the first structures to be re-evaluated and strengthened following the 1971 event.

CHAIRMAN CLUFF: Maybe there are a few questions from the commissioners about that.

Bill?

COMMISSIONER IWAN: Yes. You commented about the fact that the water level was generally down and so on. I wonder if there are planned any studies of how these various dams might have performed had the water level been up. Are you aware of any planned, analytical or other kinds of studies?

MR. VOLPE: Well, relative — relative to those assessments, I should point out to you that every one of the dams that I am aware of have already been analyzed previously, not to a magnitude 7 event, but actually to a magnitude 8.3 event on the San Andreas Fault. So, all of the dams have been investigated, by state mandate, I should add, relative to this maximum possible event that would occur on the San Andreas, or another nearby fault, if that would produce a stronger motion.

Now, relative to any future assessments, I think I would also answer yes. I think, now that we have the known performance as a result of a magnitude 7.1, I'm sure that the owners of these structures will want to go back and re-assess the analysis that was performed for a yet higher event. How did the actual performance occur?

For example, Lexington Dam was analyzed for a magnitude 8.3 on the San Andreas. The estimates that were completed back in 1977, when that study was completed, indicated approximately 2 feet of displacement conceivably could occur at Lexington Dam as a result of a magnitude 8.3. The dam actually settled about 10 inches as a result of the Loma Prieta earthquake. Now we have to go back and fine-tune our analysis to make sure that the assessments that have been made for a yet larger event, in fact, are legitimate.

COMMISSIONER IWAN: I guess that was exactly what I was thinking, is you now have some data. You have data, though, probably for dams that weren't full, and the original analysis probably was for a full dam. Maybe if you go back now and do some analysis to verify what was happening —

MR. VOLPE: Yes.

COMMISSIONER IWAN: — based on the data you got for —

MR. VOLPE: Yes, absolutely correct.

CHAIRMAN CLUFF: Further questions? Dan?

COMMISSIONER EBERLE: When you go out there and inspect the dams, maybe this is an unfair question to ask you, but how is that information transmitted on to the public safety officials?

MR. VOLPE: Well, obviously, the owners of these dams are in communication with local and state agencies. Typically, these inspections or investigations are not done simply at the whim of the owner, but generally are, in some way or another, mandated or requested by, for example, the California Division of Safety of Dams.

COMMISSIONER EBERLE: I mean right after the event takes place.

MR. VOLPE: Okay. Typically, what will happen, and what did happen after the Loma Prieta earthquake, is we had people from the Corps of Engineers, the California Division of Safety of Dams, and on one occasion we had a person from FEMA, who actually accompanied us during the investigation. They did not take part in the investigation, but they were there, and we communicated our concerns about the particular damage that we were seeing.

Exactly how that information is then passed on to other agencies, I really can't answer the question. I'm not sure.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: You might consider this question sort of too speculative, but I'll ask it anyway. In connection with the damage and then the repair of the damage, will those dams then be sort of pretty much as good as new, or will they, perhaps, because of this experience, be a little more susceptible, even despite the repair and patching up, a little more susceptible? In other words, are we going to have to watch them maybe a little closer in the future, for either the earthquake susceptibility —

MR. VOLPE: Yes.

COMMISSIONER SCOTT: — or maybe gradual deterioration or leakage?

MR. VOLPE: Well, that's a very interesting question, and I don't know that the answer is similar to what has happened at the San Francisco-Oakland Bay Bridge, where CalTrans is suggesting that the bridge is even stronger now than it was before the earthquake. Perhaps that gives me a certain degree of calm or something, as I'm driving over the bridge.

The question is a very interesting one, because we are looking at dams that now, on the main, are in excess of fifty years old. What happens in the aging process of earthen materials is reasonably well understood by engineers and geologists. And the reason that I say that is, the dams in general are instrumented. We have internal instrumentation within the dams to tell us, for example, water pressures and rates of seepage, settlements that may occur, and so forth. These are done on a regular, recurring basis.

Now, I think the direct answer to your question is that when these structures that have been damaged and repaired are filled again for the first time, which, hopefully, will be this year, if our drought conditions are eased, they will be monitored much more closely during this first refilling after the damage.

But from a standpoint of the completeness of the repair, I think I would have to say that a dam, when repaired, should be as good as new, if not actually better, because, for example, in one of the embankments that suffered some damage, we had a material that, really, we would like to replace. Now that the dam has suffered damage, this will give us the opportunity to replace a cohesionless material, one that does not have any ability to sustain substantial damage without cracking, can be replaced with a cohesive material that perhaps will far better withstand even a larger earthquake.

So, it's an interesting concept, and it's one that we're aware of. And I think the response that these structures will be carefully, and more carefully, evaluated with this first filling is a very important one.

One interesting thing has come out, that I think is very, very interesting, is that perhaps the largest occurrences of landsliding in Northern California actually occurred in 1907 and 1908. Now, that is a fact that has gone relatively unnoticed, and perhaps did not get its correct correlation with the great earthquake of 1906, the reason being that the 1906 event occurred in April. It was not until 1907 that substantial rainfalls, 1907 and 1908, occurred, that that rainfall was the triggering mechanism for these landslides to occur.

Now, how do we correlate that information with what has happened in the Loma Prieta event? I think the fact now is that we have wet season immediately coming up on us, so we will have to be very, very careful about those assessments, especially for dams and landsliding, with regard to that triggering mechanism.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: Okay. I'll get my own — thank you.

A question about the studies that were done prior to the earthquake on the response of the dams, did they predict the transverse cracking and the settling to the degree that was predicted or not?

MR. VOLPE: No, generally not, Tom. And the reason is that the majority of the investigation really is concerned with the catastrophic failure of the dam. So, the majority of the effort actually is in evaluating the response of the dam.

The damage at Lexington is a very, very interesting one, that we need to understand why this has happened. It does not appear that it would have related to a catastrophic failure, because the cracking really extended only to a depth of about 5 to 6 feet, and it would not have been a direct conveyance of water from upstream to downstream.

And what happened at Lexington may be a result of previous drought conditions. The abutment materials at Lexington Dam is a very, very dry, friable colluvium material that is about 10 feet deep, overlying the Franciscan bedrock material. As a result of that material being very dry, it therefore is susceptible. And, you see, it is not a part of the dam, and it is very susceptible to this type of cracking.

Now, what caused the cracking is still not clearly understood. Is it a direct result of the fact that the dam is there? Because if you — if you go upstream or downstream of the dam, looking at the same material, you do not see that type of cracking. So, there was some type of a response caused in the abutment area, simply because the dam is present. And it's not that we do not understand this, but typically, it is not something that is evaluated.

So, I think the damage that we see as a result of the Loma Prieta earthquake, when shared with the engineering community, will perhaps cause other types of investigation to be performed in the future.

EXECUTIVE DIRECTOR TOBIN: The settlement and the longitudinal cracks, were they expected?

MR. VOLPE: Yes. As I've pointed out, the estimated settlement of Lexington Dam, for example, was approximately 2 feet as a result of a magnitude 8.3 on the San Andreas.

EXECUTIVE DIRECTOR TOBIN: With a full reservoir.

MR. VOLPE: With the full reservoir. Now we have approximately 10 inches of settlement with a magnitude 7.1. One of the questions previously was, "Will we go back and investigate that?" I'm sure that that will be something that will be considered, because this now is an extremely valid data point that we have not had in the past, that we need now to correlate for future responses.

EXECUTIVE DIRECTOR TOBIN: I would agree. I agree with the conclusion the dams appear to have performed extremely well when subjected to the very high accelerations that some of them were. On the other hand, I think that the studies ahead of time that evaluated the dams have not yet been correlated with actual conditions. And whether or not we were just lucky or our analysis beforehand was very good has yet to really be answered.

MR. VOLPE: Well, we would hope that it was more because of our prowess analytically, as opposed to anything else. But I agree with you. I agree 100 percent.

EXECUTIVE DIRECTOR TOBIN: Were saiche conditions observed in any of the dams? And I recognize that the water levels were so low that the characteristics of the reservoirs would change dramatically.

MR. VOLPE: Yeah. No, the only saiche condition that I heard of was at Lexington Dam. As you know, that is shared by the Los Gatos Rowing Club and the University of Santa Clara. There happened to be two freshman crew teams out on the lake at the moment the earthquake occurred. And the coxswain was not sure whether or not the freshmen simply were not handling their oars correctly or not, but he assured me that there was Olympic team caliber getting back to the dock after the earthquake occurred.

The only saiching that we have seen — and saiching, for those in the audience that may not know what we're discussing — is simply a mini-tsunami that has occurred within the reservoir areas. During the 19 — let's see — what are we talking about? — the 1984 or '85 Morgan Hill event, there was observed saiching at Anderson Dam. There we have electronic recorders for the reservoir, and we actually detected the saiching that occurred during the Morgan Hill event.

Now, that was extremely interesting, because that was a major shaking on the Calaveras Fault, and with the proximity of Anderson Dam to that, it received — actually, at the time, it was the highest recorded earthquake acceleration ever for an embankment. Anderson Dam recorded 0.65 g at the crest.

And the saiching, incidentally, Tom, was on the order of less than a foot that was actually picked up by these automatic recording devices. That's not to say that a magnitude 8.3 with a full reservoir on Austrian Dam, 8 miles from the dam — epicenter, may not cause a saiching substantially higher than that. But this is an area also that is not that well understood analytically, but it is something that generally is considered.

CHAIRMAN CLUFF: We need to move on.

Bill, you have one last, quick question?

COMMISSIONER IWAN: If I might, just a very quick question to follow up on the idea of these studies that will be made considering the data that you take. Who will be making these follow-up studies, and where will the money come for those studies? Has money been allocated for that already, or who's going to pay for those?

MR. VOLPE: No, not to my knowledge. I believe there possibly will be FEMA contributions to the actual repairs of the dams, although that's not clearly understood by me. But generally, I should point out that the owners of these structures, a group like Santa Clara Valley Water District, generally will take it upon themselves to have these studies performed.

Now, we look at a rather large agency-like PG&E, or East Bay Municipal Utility District, Santa Clara Valley Water District, the groups down in Southern California, where there is a financial resource to have those analyses performed. It's generally not a problem. But you take an individual, small owner, and he only owns one particular structure, the cost of these analyses is rather high, and it becomes more difficult for the small owner. And, of course, earthquakes know no bounds, so it's not guaranteed that the earthquake is going to impact only the large owners.

But, to answer the specific question on the Santa Clara Valley area, I would assume that Santa Clara Valley Water District will initiate their own investigations and correlations.

CHAIRMAN CLUFF: Thank you very much.

Thank you, Dick, for coming here and sharing your knowledge of this important event.

MR. VOLPE: Well, thank you, Mr. Chairman.

CHAIRMAN CLUFF: The next presenter to us is the mayor of Los Gatos, Joanne Benjamin.

Joanne, if you would like to come up to the speaker's box.

We're very pleased to have you with us this morning, and we are delighted that in your schedule, that you might be able to come and share with us, our Commission, things from your perspective that worked, that didn't work, when it comes to seismic safety. And our purpose here is to help you. We're not here to point any fingers. We're here to find out what worked, what didn't work, and if it didn't work, how we can work together to improve the level of seismic safety for all of California.

MAYOR BENJAMIN: Okay. Well, thank you very much.

And thank you, also, to Dom. He's already heard us speak once, but he helped get some money through the legislature for the 1/4-cent Sales tax. So, we appreciate that.

Los Gatos started preparing for an earthquake several years ago, and started, actually, with a grant for one year and followed up with town money for the next two years, holding neighborhood meetings in which people came out and we had a videotape which we explained, because we have a lot of older homes and unreinforced masonry buildings, exactly what people could do, everything from tying down their foundations to strapping their water heaters.

While we did this, and a lot of people did do it, I have to say that my husband was one who went to one of those meetings, heard about strapping down the water heater, came home and put it on his list to do, which is stuck on the refrigerator, and almost up until the quake, it was still there as one of those things on the list to do.

Unfortunately, for our own home, we had a lot of plumbing problems in the month of September, and had to have a plumber come out and do several thousand dollars' worth of plumbing to our pipes. And in doing that, he had to move the water heater, because we had pipe breakage within the walls. When the plumber moved the water heater back, the plumber strapped the water heater to the wall, so, fortunately, we didn't have that go over.

So, we were lucky, but, as I said, a lot of the people, unfortunately, probably didn't do the things that they had heard.

We also put out — and I have a copy of it — a workbook that we did in 1987, with a letter from the town council, and it talks about all the things, of strapping your water heater to what to expect in the quake, how to turn off your gas meter, electricity, you know, don't burn candles, all of those types of things.

And on the back, it's rather interesting. It says, "What to Expect," and it says, "Many homes are jarred off their foundations or fired or collapsed," and that happened in Los Gatos.

"Police, fire, and emergency medical services are extremely difficult to contact." And that happened — our phones went down immediately and the power went off, and they were overloaded with service demands for the people who could get through.

"Electricity is out," and that happened in Los Gatos. My home didn't have power for three days.

"And there are major disruptions of water, natural gas, and sewage service." And that happened. We had water mains broken all over Los Gatos, even on Los Gatos Boulevard, a newer part that had just been repaved, and natural gas leaks all over town. In fact, PG&E had to put a new line up the main street of Los Gatos.

"Many roads are closed or clogged. Highway 17 from Los Gatos to Santa Cruz will most likely be closed, and Bay Area bridges are closed." And that happened.

So, pretty well we predicted what could happen.

"Landslides have occurred in the Santa Cruz Mountains and other hillside areas." So, not only did we have the town's problems to deal with, but we had a lot of people who couldn't get home that night, because they lived in the Santa Cruz Mountains, and they were stuck at the roadblocks trying to figure out how to get home.

"Aftershocks are likely." And they occurred all night and have continued to occur. The last big one was last Tuesday, just a week ago. "And they will compound the disastrous effects of the earthquake." And mentally, now, we're seeing people who are just freaked out because of — you know, "What is that noise?," or "Is it going to quake again?"

As far as one other preparation, we worked with the county OES last year in June, revised our plans, and also put together some new rules for as far as what our staff members would do. And then, in August, we had a tabletop experience, which would be an 8.0 quake.

In August we had a small quake. If you think back, it was in the evening, and it actually put together our emergency team for a few hours, to kind of practice what they had just done as the countertop experiment a couple of weeks earlier.

But when August (sic) 17th hit, basically our plan functioned well. Our EOC team went into their roles, and continued that night and went through — and there were no great surprises that next day. We found that the damage that — as I explained earlier, had happened.

I should probably go back to one other thing, as far as preparation, and that's the Senate Bill 547, which is — deals with reinforced masonry buildings. We had gone through a survey, as the bill had asked, identified the buildings, had set up a seismic safety committee for the Town of Los Gatos, and had met with the building property owners of those reinforced masonry buildings.

Unfortunately, the bill is a voluntary bill, which says once you have the survey and you mention to the property owners, it's voluntary whether they reinforce their buildings or not, and there's no money from the state to deal with that.

So, I guess our recommendation would be, is that we feel, at this point in time, it probably should be mandatory that people reinforce their buildings. We were lucky that no lives were lost. And secondly is that maybe some types of grants or loans or tax incentives be given to property owners to help with that.

In Los Gatos, we have a lot of believers now, but in some of your other cities, you may not be quite so lucky. It may be like our property owners: "Gees, okay. But the building's been there, survived the 1906 earthquake, so why should we be concerned?" And what we found was, is that buildings that had survived the 1906 earthquake didn't survive this quake.

Also, what we found a lot with our downtown buildings in particular was, is that they had common walls. In other words, one person put up a building, and then somebody else put up a building, and they used the building that was already existing there. And so, it dominoes down the block.

The other thing that we found was, is that there would be a building here and a building here, and sometime, over time, somebody put a roof over between the two buildings. And so, that building has a roof, but actually no walls. The walls are for the other two buildings, and not for the building that's inside. So, that is another thing that we're dealing with.

We had an emergency council meeting, as far as what to do, about five days after the quake, trying to give some direction and setting some policy, as far as what we wanted to do in Los Gatos.

Because we're a historic community, we're a little bit over a hundred years old, and we really have had the emphasis on preserving what we have, Victorians and older buildings in Los Gatos, and we want to continue to keep that flavor. And so, our policy is basically to reconstruct and retrofit rather than demolish and building new. If a building can be saved, we'd rather save it than pull it down and then have a new stucco building go up in its place. We really want to try to preserve it if we can.

And so, again, this reinforced masonry building issue comes back into account. So, what we've said is we want all — either damaged or undamaged buildings in the Town of Los Gatos to come up to the Building Conservation Code, which is about 60 percent of current code. And on top of that, we've adopted some of the Los Angeles 88 standards, which probably then brings the buildings up to about 75 percent of current code.

Another thing which we did was, is we had about 400 chimneys down, 800 structures, and I have a list of — we have actually 15,000 inspections done in three days. We had building inspectors from all over come in, and inspected 15,000 structures. But we sent out — and I have a copy of this — a Town Talk, which is a newspaper put out by the Town of Los Gatos, which talks about the building restoration program, if you have problems with your house, what to do, where to come. We made a policy that we wouldn't charge for any permits or fees of any kind, that we wanted people to come in and get their buildings back and going.

Even if they had just chimney damage — and like I said, we had 400 chimneys that were down — we wanted them to come in and get a permit, for free, but we wanted to have that chimney inspected. What we found in August was, is several chimneys came down. People came in and put the chimneys back up, but they didn't reinforce them, so they fell again. But this time, they actually did more damage, because as they fell, they fell — if they fell into the roof of a house, that whole block came down and damaged the insides. So, we really wanted to make sure that it was done properly. And that was the reason for asking for the permit.

One of the other things I don't know if I've mentioned, but in the homes especially, in the older homes, they — we found that a lot of the homes had mud sill foundations, or if they did have foundations, that they weren't bolted or tied, even after we had done — you know, informing people, and the cripple walls of the older houses failed, and that also brought them down as a pancake.

So, all three of those things, now we're trying to advise people on how to bring their houses back up, jack them up, do that type of thing.

We're also working towards preparing for the next quake. As I said, we have a lot of believers now in Los Gatos — I mean, people feel really lucky if they only had cracks and minor damage to their house, when they look around at some of their neighbors, who have had to move out because they've lost their homes completely.

But we also feel that we need to — if there's a bigger quake coming, or something like that, or if the valley is damaged as a whole — we were lucky, because we were the only community in Santa Clara County that was badly damaged, so we were able to get a lot of mutual aid from Santa Clara County, from San Jose City, Campbell, the surrounding communities that come, and they provided us with police, they provided us with building inspectors, they — you know, so we got a lot of help in that way. But if the valley as a whole is damaged, then you won't get that mutual aid, because each community will be having to deal with their own problems.

So, we feel that we were very lucky in that respect, for as far as how our plan came off in getting the aid immediately to help us. PG&E was out 24 hours a day putting in those new gas lines, but if they have a whole valley that they have to look at, again, you won't find that.

So, you know, we're looking again at how to improve our plan, so that if the whole valley is hit, and especially if the Hayward Fault, as they say may be it, then you won't find that.

Are there any questions? I speak real quickly, or real fast.

CHAIRMAN CLUFF: Fine. We're very pleased with your articulate and very nice way of sharing your experience and your recommendations, and we commend you for the efforts toward strengthening the unreinforced masonry structures.

Percentagewise, what percentage of your building inventory in Los Gatos was seriously damaged in this earthquake?

MAYOR BENJAMIN: Why don't you — I'll ask the town manager, because — this is Deborah Acosta, our town manager, and our figures are being revised constantly as we find more things. Like I said, we had 15,000 building inspections to go out, and those were on — as people requested them, or if they found a street where there was quite a bit of damage, then they'd go and they'd even look at the buildings next door to it.

But, obviously, there were some neighborhoods that were hardly hit at all, and so we didn't go out and even look at those. But now, people are calling and saying, "Gee, I didn't realize it, but my chimney has separated from the wall, and I didn't have anything," so —

CHAIRMAN CLUFF: Good. Well, we'll ask her.

Do you have the answer, just roughly?

MS. ACOSTA: Yes, fine. I think you're looking at 10 to 15 percent.

CHAIRMAN CLUFF: That high?

MS. ACOSTA: But, again, it's — again, when you talk about serious damage, that's a home that is currently uninhabitable. You may be able to jack that home back up, and those are the kinds of things we're looking at now, to really to get people back in as quickly as we can, at least to live there on a temporary basis as repairs are being made.

But, yeah, given the number of structures in our downtown area that were affected, I would imagine it's that high.

CHAIRMAN CLUFF: Given your —

MAYOR BENJAMIN: Oh, I should — we should also add that we've given limited access to a lot of people, as far as their homes go. One of my best friends had a house that has — the walls look like they're going to fall off at any time, but yet we've told her that, under her own liability, she can go ahead and live there. But she realizes that basically the house is — she's going to have to pull off all the walls and redo it.

So, we've got a lot of those people, who are living in their homes, but they're structurally unstable.

CHAIRMAN CLUFF: Based on what you've said earlier, it sounds like you were really on top of the earthquake issue prior to this event, and the big question of everyone is, "Where do I get the funds to make improvements?"

Did any of the damage that you saw — was that a surprise to your consultants and engineers, your building department and so forth?

MS. ACOSTA: No. I think, as our mayor said, there really were no great surprises. But I'll tell you — you know, she was sharing some kind of humorous comments — department heads had had these booklets available to them for — you know, for the last couple of years, and we have one of our staff that's in charge of this program. And I don't think she could give them away to the staff. You know, she was able to prepare really nice presentations for the community.

About a week ago, she brought these back in as a reminder to people, and we all, including myself, are much more interested now than we were before. I mean, that's — unfortunately, that's the reality of what you're dealing with, that while there were no great surprises, seeing it —you know, seeing it, and the kind of damage that it does in a very brief period of time is really unbelievable.

And I know I — to give a little personal aside, I have a — my mom went through a serious fire when she was a child, and she's very fire-safety-conscious. You know, I'm sure, for generations to come, I'm going to be the one who's — you know, get real annoying with my family, talking about earthquake safety preparedness. It's the kind of thing I think you've got to live through before you recognize what it really means.

MAYOR BENJAMIN: And I think that, while there are no great surprises, all of us who grew up in California and have been through earthquakes never thought that there would be an earthquake like this. I mean, you know, you've been through earthquakes. And when it first started — and I actually was in my family room — at first I just thought, "Oh, here comes another earthquake." And then, as I sat there and started watching — in fact, my oldest daughter was in the room, and she says, "Mom, look, everything is falling, everything is breaking; can't you stop it?" I mean, you know — and it's — it's an experience that, while I, you know, like I said, just thought in the beginning it was just another earthquake, I have never been through that. And I guess, you know, all the things that I've read about earthquakes and the damage that it can do, you just always thought that it would never happen.

And the next morning, very early, we took a ride — Deborah and myself and the police chief — around town, to assess what had happened. And, again — I mean, because it, you know, grew dark in the evening — I was just amazed at the amount of devastation that there was. I mean, I just couldn't believe — and at first, as I went down the roads, I thought, "Well, the houses are still okay," because they looked — you know — and then I realized that they were off their foundations. And here's the steps going up, and here's the door over here.

And then I started to realize how many people had really had a lot of damage. And then I thought, "Well, all my contents that were broken was nothing compared to a house that's off its foundation and they've lost, you know, their whole home."

CHAIRMAN CLUFF: Barbara?

VICE-CHAIR RIORDAN: Mr. Chairman, I'm not sure how to use the microphone system.

I guess you control it. Is that right?

CHAIRMAN CLUFF: No, no. Just keep pushing buttons. It works.

VICE-CHAIR RIORDAN: Push buttons and it'll work.

Obviously, you've had to have a number of volunteer mutual aid types, and particularly in the building inspecting area. How did you — and maybe this is a question more for your town manager than perhaps the mayor — I don't know who made those arrangements — but did you — how did you achieve the number of inspections that you needed to have, and what course did you take to bring in those additional building inspectors?

MAYOR BENJAMIN: Go ahead, Deborah.

MS. ACOSTA: Those requests, in the best circumstances, should go through OES. I can't say that we did that in every case. We have a new building inspector who has a lot of — a building official, director, who has a lot of contacts with other cities. He put his calls out as soon as we had phones.

But we had people arrive, really voluntarily. And I think you'll find that at any major event, that your neighboring cities really come out. And there's several reasons for that. You know, one is because we just were all in the business, and that's what we do when you want to help out. But there's also a professional side, that you want to see what's occurred to bring back to your community so you can learn from those kinds of experiences.

So, part of it happened voluntarily, part of it happened through requests through OES, part of it happened — I made some contacts, again, as soon as we had phones available, to a variety of cities in the area as well, asking, "Please get us people."

But, I'll tell you, the problem becomes a couple of weeks later. And the problem is now for us that we had people the first few days. We had people the first few — you know, the first week or so. Now we have a tremendous need for building inspectors still. There's a lot of inspections that have to happen. It's not a failed URM building, but it's a senior citizen who says, "I've got, you know, a crack in my wall; can I live here?" And maybe it's not serious, but for that individual it is serious. And we're having a real hard time getting enough staff available to us now so those requests go on.

So, are there, you know, systems that make all of that happen instantly? Kind of. But the rest of it happens, again, because we weren't affected by everybody. We were affected the worst in our county, and there were other cities who could provide that kind of assistance, and want to, and I think that would happen again.

VICE-CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Commissioner Waste?

Three Bills in a row here, huh?

In the other hearings that we've had, we've determined — and it doesn't surprise us that information was terribly important, and communications. We also found out that in the early moments, both of these are, for all practical purposes, nonexistent. And we have developed that the local media, particularly local radio, became a very vital link in this gathering of and dissemination of information.

I'd like some comment on your experience in Los Gatos. It's now five minutes after five, the power is out. What did you do at that point?

MS. ACOSTA: Well, at 5:05, I think many of us were still under our desk, and about 5:10, I — the next thing that took place — we set up our EOC immediately in our parking lot. We weren't sure if our building was secure. Our communication initially really didn't happen in any regard. It wasn't through the media. The media had no idea we'd been hit. You know, most of the media was focused on — and for good reasons — focused on San Francisco and Oakland. And I think they really thought that's where the majority of the damage was.

We assumed at that point — really, until about eleven o'clock that night, that we were on our own, that we really had no assistance from anyone. We really had to assume that the entire Bay Area was hit as badly as we were.

Later on in the evening, we started getting, you know, sheriffs there to assist. We had other people available to us that started giving us information.

By the next day, the media was really picking up and providing information about us to our community and vice versa. We did — were able to commandeer a cable television channel locally, even that night, to begin as soon as the power came back on in some of the outlying neighborhoods — And there were some that got power right away — that this channel would come on saying, you know, "Please stay out of your homes tonight," you know, "This is the kind of thing we're dealing with," "Don't drink the water," those kinds of things.

That proved very effective, and I think, for any communities who have local cable access channels, that that's helpful. But even if you don't — because we didn't use our channel — we didn't have the kind of power to be able to do that out of our local generation station. So, what we did was we used a systemwide channel that they have for pay TV. And they gave us that channel knowing there was a problem.

So, that was helpful.

We had a very unique situation, though, in Los Gatos, that we've got — for a small community, have two very excellent volunteer groups. One is amateur radio operators that show up — I mean, their system is incredible. And immediately upon an emergency, they dispatch people to locations prearranged. So, we had someone show up at our EOC. And, again, they work with our police department a lot, but they began to try to make contact with the mountains, try to get to families, try to make sure that people, you know, could have some way of communicating, because we couldn't get up there.

And then we also have a unit that's called our Disaster Aid Response Team, and, again, volunteers, about 70 people in that group, and there are about a hundred in the ham radio operators — excuse me — they get offended when I use that term — amateur radio operators — that really began to operate that night, as well as our reserve units, that really made — you know, we could have survived, at least for a little while, on our own, and really had to do that until the other folks began to arrive. So, those volunteer efforts were really critical.

MAYOR BENJAMIN: From a resident point of view, a lot of the residents didn't know what was going on because they'd lost their power, they'd lost their phones. And I know, for one, after — as soon as the quake hit and I could get out of my house, I went to pick up two of my other children and turned on the radio, and they were still talking about Candlestick Park and the Giants game. So, at first, I thought, "Oh, it's only hit right here." And then, a little bit later, I started to hear about the Bay Bridge.

But the radio, as far as for most of the residents, that was the only way that they could figure out what was even going on in the Bay Area, because they didn't have electricity, they didn't have a TV to listen to. So, they had their portable radios plugged in.

The other thing that I think that we need to emphasize to residents is, is that — batteries for your radios and for your flashlights. If I didn't have two teenagers and have all of those things that need batteries, I would have been — and go to Price Club all the time, I would have been up a creek, because, you know, the batteries in your flashlights are dead, and the batteries in your portable radios are usually not very strong, and they'll go out after an hour.

And because of the gas leak — we had a gas leak on my street — we were afraid to use candles, so therefore, people didn't have any lights, and that was a real frustration to them. So, you know, one of the other things to emphasize to people in their preparedness is to have a store of some good, brand-new batteries to use.

CHAIRMAN CLUFF: We've got a very full agenda.

Commissioner Kockelman, you had a question, or Keith?

COMMISSIONER KOCKELMAN: Mayor or City Manager, there is a law that required, you know, an inventory of the unreinforced masonry buildings. What have you totaled out on that? How many did you have, approximately?

MS. ACOSTA: We had 24 structures that were originally identified as being unreinforced masonry buildings. Of those —

COMMISSIONER KOCKELMAN: Do you have — do you have more now that you could identify?

MS. ACOSTA: There were a couple new ones —

COMMISSIONER KOCKELMAN: Yeah.

MS. ACOSTA: — that popped out, yes. And when you say "totaled out," we've got — demolished, we've demolished three buildings that were really hooked together. That started last Saturday, although our process for demolition is a little bit slower than some.

And for the rest of the buildings, we have a number of — we probably have — gosh, in terms of buildings, another twenty or some-odd that are not all URM, but would be connected to a URM building that had substantial damage, but we hope will not be demolished.

COMMISSIONER KOCKELMAN: I'm interested that you've adopted an ordinance similar to Los Angeles. You know, their ordinance requires them either to be strengthened or demolished over time. If you do that, that's going to be —

MS. ACOSTA: No, what — what — no, what she indicated — if there's any confusion, let me help, and our building official will be here later today — we picked up some of the elements of Los Angeles Division 88, in terms of the strength that we're requiring in buildings, not the demolition.

We're trying to restore buildings in town. That's our identity of our community, and we can't let that go.

MAYOR BENJAMIN: And it comes up to about 75 percent in strength.

COMMISSIONER KOCKELMAN: And will you — do you plan to order that, over time, like L.A., you know, order people to do that?

MS. ACOSTA: What we're doing at this point is that for those buildings that need to be repaired — and most of them now need to be repaired in some form — that, yes, we are requiring that. That was adopted by the council under an urgency ordinance last Monday evening.

For those buildings that have not been injured, haven't been damaged, then we're looking at those same standards. We've explained that to people at this point; I don't think they understand yet, and the council hasn't been put in the position of, you know, anyone appealing a decision yet. But that is our approach, yes.

COMMISSIONER KOCKELMAN: You should be commended. Thank you.

CHAIRMAN CLUFF: Commissioner Cortese had a question.

COMMISSIONER CORTESE: How is the aid flowing? Are you getting a quick response from FEMA, from the state? Did that happen immediately? Under the Natural Disaster Assistance Act, it should have been in place and flowing immediately. What happened? What was your experience?

MS. ACOSTA: We got lots of phone calls, and I made lots of phone calls to FEMA. The first team — and I don't mean to sound critical, because they have been wonderful, once they arrived — the first team, though, did not arrive until last week to begin to assess damages in our community.

I know they've been very busy, so, again, I don't mean to be critical, but we have not received any FEMA money yet. We did receive $500,000 yesterday from the County of Santa Clara, as part of the first million that they received to help in some of the advances that we need for things that we've been doing on our own.

We have yet to — the DSR's, those documents that have to be filled out by FEMA and by the Town, several of those have now been completed and are off to FEMA, and we hope that we'll be getting funding. But so far, there — we have not received anything.

CHAIRMAN CLUFF: Well, we need to move on.

Thank you very much —

MAYOR BENJAMIN: Thank you.

CHAIRMAN CLUFF: — for taking the time to come to meet with us.

The next speaker is, again, Thomas Mounts — Mounts — excuse me, emergency preparedness officer for San Jose, and he's going to talk to us about his activities and what we can do to work together to further improve seismic safety.

MR. MOUNTS: Thank you. And I'll try to make this fairly brief. It's almost embarrassing to follow Los Gatos and all the troubles that they had, because in San Jose we didn't have quite that experience. And it's not something that we're smug about; it's something that we feel very, very thoughtful about.

As the mayor and manager of Los Gatos pointed out, this earthquake had one very valuable outcome, and that was, it brought some focus to the issue. As I told the city council the week following the earthquake, "Now that I have your attention, there are some things I want to raise."

Real quickly, what I'm going to be talking about is response and recovery. Later on, the building official from the City of San Jose can come in and you can ask him all of the specific questions about details about our URM program and accelerations and those kinds of things. But I want to quickly talk about response and recovery.

We had very similar experiences to many other localities in terms of the timing of this earthquake. It made for some very unique situations. Many people were out of work early to go watch the World Series, many were on the road because it was the commute time.

The city management response was affected by the city council meeting schedules. Tuesdays are our city council meetings. We have a split session, and what had occurred was the afternoon session had ended, many of the department heads and council members were on their way to go have a bite to eat before they came back for the seven o'clock evening session. That made for some interesting response times.

The city manager of the city was at Candlestick Park for the World Series.

The emergency operations center was activated at 5:10. The first information that we got actually came in through the radio amateurs. We have a program in San Jose — the local group has gotten together — where they immediately set up a net and call in on one frequency, reporting what they can see. We had about 40 calls come into our center net control, who then gave me a phone call at 5:15 and said, "There's no real obvious damage."

That was very valuable, in that I had a couple of city council members and the mayor sitting in my lap saying, "What's going on?" And I was able to explain to them, "At first look, we don't see anything really disastrous."

From then on, the main sources of information we got for a few minutes were from the media — we had an emergency generator in the EOC, so we had a television going — and stuff we got from police and fire dispatch. There was an immediate confusion on where this earthquake had occurred and where the damage was. This was pointed out by the folks from Los Gatos.

Because of the media concentration in the north part of the Bay Area, up around San Francisco and Oakland, and all the intensive coverage they got of the Bay Bridge, of Candlestick Park, of the Cypress structure, we immediately thought that that's where the earthquake had occurred.

And our first phone call from the city manager, who got on his cellular phone, seemed to indicate he thought it was fairly close also.

The first significant San Jose damage was reported at 5:35, through regular dispatch channels, and it was a collapse of a Lucky supermarket. Well, we immediately dispatched, you know, a couple of fire units out there, and it turned out not to be a collapse. We had a piece of a roof that seemed to have a crack in it.

Then we had major structural damage to a bank downtown. There was a crack appeared in the atrium.

The types of calls that came in — and I think that this experience probably occurs in all these types of events — was not real clear as it came in through dispatch. One of the things we're going to be looking at is, how do you start verifying that before you get all excited about these major problems that are occurring?

By 5:50, the City had made arrangements for an aerial survey. Our police department has both fixed-wing aircraft and helicopter aircraft on contract, and we were able to get both in the air and get our police people and our public works director into the air to do a quick aerial survey and get back to us and say, "No, you know, the city is not burning, we don't have major collapses, we don't have roads that are — that are falling down on each other."

At the time of the event, we had 175 fire personnel on duty, and 330 police officers on the street. Police and fire off-duty personnel were notified through the media to report back. Some made automatic call-backs, and by seven o'clock, we had another 140 additional officers and 40 additional fire personnel available at the Fire Training Center, and we had staffed three reserve rigs that we really never needed.

What happened was, early in the event, early in the event, within two hours, it became pretty clear that we had been spared the major damage which had hit Santa Cruz County, San Benito County, the Santa Cruz Mountain areas, Los Gatos, and the San Francisco-Oakland local damage. And we quickly were able to ascertain, you know, what our situation was. By eight, nine o'clock, we had already put together what we considered our summary of damages, or our response tally.

We had had about 244 fire responses, but most of those were gas investigations and those types of situations, only four true working fires. We had five events that were classified as collapses. We had a piece of a wall come down from a piece of property owned by the mayor downtown. We had those structural things that I mentioned earlier, but very minor types of things.

We had 735 police calls related, within the first six hours, and we had about 300 injuries that were reported to hospitals, most of these very minor, and one death was later reported, which was a heart attack. So, we had no — you know, nobody was killed by a fire or a falling object or a collapse. Really, we did not have this major type of event.

By noon on Wednesday, all the City facilities, all the unreinforced masonries in the city, and all high-risk residential areas had had initial safety inspections.

Once we got to that point, our immediate needs had been met, we then moved forward into another phase, which was attempting to offer our resources to other jurisdictions, both within the existing mutual aid plans and outside. While the police and fire mutual aid plans were in place, there were no immediate calls for San Jose resources. We had this feeling — and our police people had this feeling — "Why aren't we being told to send people to Los Gatos?," "Why aren't we being asked to provide people to Santa Cruz?" As a result, we went ahead with some self-initiated response.

The mayor of San Jose, via, again, amateur radio, was able to get through to San Francisco, offered some aid there — Mayor Agnos said it wasn't needed at the time. In addition, we sent an airplane in the air over the Santa Cruz Mountains, got the frequency of — because there was no phone communication with Santa Cruz — even the state OES wasn't able to get a hold of them at the time — we got a plane up in the air, found out what their police frequency was, got over their EOC and said, "What's going on?," and made an offer of assistance.

By the next day, we had started providing some of that assistance. We had a lieutenant, a couple of sergeants, and 15 officers over to Santa Cruz. We had the same complement over to Los Gatos. The fire department had sent the HAZMAT staff that we have over to UC Santa Cruz to help out with the spill that they had there, and when the county sent their hazardous incident team to Santa Cruz, our response team was assigned to cover the entire county.

Our Neighborhood Preservation Department had code enforcement inspectors both in Los Gatos and Saratoga on the second day, and we had building inspectors to several school districts to assist them.

By the end of the first week, we had also sent the following assistance. We had delivered several truckloads of food, clothing, and camping gear to Watsonville, several trucks of food and camping gear to the mountain areas of Ben Lomond and Zayante, Redwood Estates, and provided front-loaders and dump trucks to Saratoga to help remove landslides.

We had also started providing some specific supplies. We dug into our warehouse, found some rain gear. If most of you will remember back, within two days following that earthquake, gee, what could happen next? We had a rainstorm. We got that rain gear over to Los Gatos because they had all these inspectors on the ground out there trying to do these safety inspections, and they were going to get — their problems were going to be compounded by the rain. We were able to get traffic cones out to Redwood Estates, and more supplies to Watsonville.

Later on, we also helped provide some coordination and implementation of a plan to accept some of San Francisco's rubble down at our Zanker landfill.

One of the things that we did that we may end up having to — not apologize for, but respond to, was, also, we set up an informal agreement where we almost adopted the unincorporated area of Redwood Estates, up in the mountains, because of some contacts that we had made with them early. And we helped expedite some of their requests, outside of the normal channels of coming through the county or going up through the state.

What really occurred was that we were able to provide those because the damages in San Jose weren't that bad. I mean, we had damage. We have — in cur City buildings, we — you know, we have a lot of cracks that are appearing, ceiling tiles, shelving and lights, some windows broken, but the total is only about $760,000, in the buildings themselves. We have four minor buildings that have been put on limited access, because we're not quite sure of their safety.

Transporation, all of our roads and bridges checked out. We have some cosmetic cracks and some raising of some curbing, about $100,000 worth of damage. And these are all very general numbers that we're in the process of refining.

In terms of the City infrastructure, the water lines, sewers, the water pollution control plant, another $150,000 — very small numbers.

The airport, we will be hearing from later on, had some cracked glass and a water main. They figure it's less than $50,000 total costs.

The one area that we still haven't gotten a complete report from is our redevelopment agency. Private facilities — and this is the big issue that's facing us right now — we're still in the progress of evaluating the status of private facilities. We think we've identified all the unsafe facilities. What we have to do now is go back and figure out what the cost is of all the damage in San Jose.

Most of the residential things we're finding are in terms of chimneys, which I think is probably going to be a recurring theme throughout all your testimony, plaster and wallboard cracks, and contents. However, because we are not able to get a good feel on that, we're starting to get some interesting numbers coming in. For example, we know of a home over in the Evergreen area whose insurance company has said, "You've got $27,000 worth of damage." That's stuff that we wouldn't see in a drive-by inspection. Those numbers are going to be very long in coming, and I hope nobody's going to be too upset about that.

Most of our commercial problems, again, are in terms of cosmetic cracks, ceiling tiles, shelving, lights, and probably a lot of loss in contents.

The unreinforced masonry, prior to the event, in response to the state law, the City had identified 240 unreinforced masonry buildings within the city limits and had gone ahead and asked the owners to start assessing those, as part of our Hazardous Building Ordinance.

Of those 240, only three are still tagged as limited or unsafe. The rest of them have no serious structural damage. There are nine other buildings in the city of various types of construction that still have some restricted entry.

In addition, the county courthouse, which was built in 1866, has been declared unsafe by the county. It's a county facility, but is an historical building. There are hopes to save it, and the City hopes to be able to assist the county in that effort.

There's lots of — there was lots of minor utility damage, water mains. One of the big events that we had to deal with late in the evening was a water main that had broken near a hospital, and the hospital actually ran out of water. It was Good Samaritan Hospital, which is a fairly good-sized facility. At the same time, our firefighters, if there had been a fire in that area, would have had no water pressure. We're going to be looking to dealing with the water company and trying to get some additional safety measures built in and deal with being able to respond to those specific types of issues on a quicker basis.

And we had up to about 26 to 30 hours of electrical outages in various parts of the city.

What did we learn? The earthquake validated many of the messages we've been trying to get out, and which the Commission has been trying to get out. And some of us went back and reread, you know, the *California At Risk* publication and said, "Aha! Here we are. Remember these issues; we've raised them before, and they're all back."

Modern highrise structures, where people kind of go, "Oh, I don't want to be" — they really worked well in these earthquakes. The ones that were built up to code worked real well, but a lot of work needs to be done on nonstructural type of items.

I don't know whether you'll hear it from the county people, but they — for example, in this 11-story — which is not a true highrise, but it's a fairly good-sized building — had a lot of cabinets fall down. Big lateral files that ended up not being bolted down twisted and fell and had to be dismantled and thrown away, and there were some minor injuries caused by those falling.

And the City lost a lot of nonstructural types of items too, computers, bookshelves and things that we just hadn't gotten around to bolting in. The message, I think, has gotten out.

Major overpasses are probably going to be okay. The structural work that's been done following recent earthquakes and the evaluation has proven to have been very valuable.

Unreinforced masonry, you know, we didn't have quite the damage that we would have anticipated, but it is still a problem. I think state law — and the City is going to be looking at strengthening its own Hazardous Building Ordinance, and you'll be able to ask that question of the building official later on. But the local programs need to move forward.

Transportation tie-ups, we didn't have the types of failures that you might have anticipated, but the timing made for some real problems, in terms of emergency response in San Jose because of the type of commute traffic that occurred. There was just absolute bottleneck for hours on the major north-south and east-west arteries through the city.

And utilities will continue to be a concern in any major event, because they're so vital to the ongoing life of the city.

One of the other things we learned is that — that we hadn't quite massaged enough was the media. They're going to be a key player in actually responding to an event. We've realized that we have to get the news out, especially if it's good news. That's the one thing that wasn't coming out very clearly. We were monitoring a lot of news channels and were getting calls of, "What happened to San Jose? I've been watching the television — did San Jose go up in flames? — because we're not hearing anything."

Our local TV channel, Channel 11, had gone off the air. What was occurring was we were hearing reports from San Francisco, Oakland, Los Gatos, Santa Cruz, Watsonville, which drew this big circle around San Jose, and there was a general feeling outside the area that San Jose had probably just disappeared into a cloud of dust. Our own citizens were very concerned, because they weren't getting information on what had happened to San Jose.

We're going to be working with the media, saying, "Look, we realize the importance of getting, you know, these sensational stories about the damage and death out, but please, you also have to get out the news that we're okay. Here's what your citizens can do in the meantime, and we're ready to help."

I think the main thing we learned was that the city was lucky, but we were also in good shape due to some planning. We had an earthquake preparedness task force that had come into being following the '84 Morgan Hill quake, that had identified 76 tasks that the City needed to do to get, you know, up on its preparedness. We aren't very far into that process, because it's very expensive. But the work that we have done was a good start.

We had already moved ahead on identifying high-risk areas, on identifying a lot of different programs we could get out to the citizens that were very valuable. Also, those points helped us highlight where the potential problems might be, and we were able to respond quickly. Information about that program has become very popular in the last couple weeks.

Our home visit program, a very slow, meticulous process, where we've got firefighters going door to door in every neighborhood saying, "Hi. Would you like us to come through and give you a talk about earthquakes and take a look at some items that we might be able to fix — we might be able to suggest that you fix down the road?," has been very valuable.

And, again, the identification of where those URM's were.

Toxics programs worked. One of the things — I was talking to our toxics program manager, and he says, "You know, if we hadn't had our strong hazardous materials storage ordinance, we might have had the types of problems that occurred in other cities, only in a different frame." We're surrounded in this area by lots of firms, carrying vast amounts of very toxic chemicals. We have a very pro-active program that requires them to provide good storage plans, move things that don't mix well apart from each other, run regular drills, provide maps, and do lots of shoring of the types of containers that they're in.

We had only five minor spills in San Jose. We would have anticipated more if we didn't have this program in place. It's a good expenditure of what was a fee-related revenue. So, I think that's one of the things that we can look at as being a good outcome from San Jose, is as you start reporting out what occurred and what went right, is anybody who doesn't have a good hazardous material storage program, you can go out, you can ask these companies, and right now they think we're very good for the fees that we've charged them, because we probably averted some major disasters for them.

We also had a great response from employees and volunteers. Whether we could expect it the next time remains to be seen. We need to cultivate that.

One of the things the City has realized is that a lot of people left their families, left the damage that they did have — we have many firefighters who live up in Santa Cruz and over on the other side of the hill. They left those and came in to work. We want to be able to cultivate that by providing some additional support for them to be able to contact their families and to get back to them.

We also had a great public response to our need for donations.

What do we need to work on? And I think this is stuff that you're going to find most agencies are going to be dealing with.

Communications comes back all the time, if you're in emergency preparedness and emergency response, both within the city itself, our responders, and trying to get out to our citizens. And how do we communicate with the other localities once those phone lines go down?

Coordination with other localities, with other cities, with the county, and with the state, there are formal coordination lines in place, there are plans in place. But what we found was that the informal worked as well, and in some cases, much better. How do we make those two interface with each other?

Support for the responders. It's one thing to say, "Yeah, we're going to have police and fire people come out and handle all these situations," and keep them on the line and replace them in the middle of the night, but if you don't have food and supplies to back them up, which, in some cases, we didn't, it's not going to do you much good.

Our biggest bugaboo, damage assessment for private facilities, we're still wrestling with that. And I think I'm — if anything can come out that would be valuable to San Jose, it's how to quickly get, you know, damage estimates for over 200,000 dwelling units, major commercial areas, and especially in terms of interior and contents estimates.

It's one thing to be able to send your inspectors through on drive-throughs, and then go back and do safety, but if all you're talking about is an interior of a Liquor Barn that's lost every bottle of liquor, but doesn't qualify for either structural damage or major safety, we're not going to know what that number is.

So, if anybody has great ideas on how to do that, we'd look forward to it so we can answer the media's questions.

Also, we found out we need more coordination with our 22 school districts. They're all separate political entities. On the day following the quake, the question was, "Who's going to be open, who's not?" One of our school districts chose to remain open, one of our larger ones. We wish that they hadn't. Because there wasn't a strict safety issue, we didn't have a real direct way of telling them that, other than indicating our concern.

We hope to be working more closely with the school districts, and with the state public education folks to say, "Look, we develop a plan here, where when we want them to stay closed, they can stay closed, so we can get our people moved around and respond as necessary."

And then the last thing is, as I've pointed out earlier, is just a better use of the media. And I think that's going to come out throughout just about any kind of event that occurs.

Any questions?

CHAIRMAN CLUFF: Thank you very much, Tom, for that very complete report.

I have a number of questions which I jotted down, and you covered all of them. I presume that that's the case with the rest of the commissioners, and I'm going to move on.

(Laughter)

CHAIRMAN CLUFF: Bill, you had a question?

COMMISSIONER KOCKELMAN: I have a question from a layman's standpoint. You mentioned cosmetic problems with the bridges. To a layman, that "cosmetic" is, you know, like paint or something surficial on a building. What do you mean by "cosmetic" damage to bridges?

MR. MOUNTS: Oh, actually, it's cracking in the curbing. There was no — no structural elements affected. We — you know, where we had some buckling of pavement, but — but nothing structural.

CHAIRMAN CLUFF: Commissioner Iwan?

COMMISSIONER IWAN: Yes. This whole hearing has been sort of a deja vu to me, and I remember being here some years ago, after Morgan Hill, and we talked about some of the same things, actually. I guess my question is, how is this earthquake different, from an emergency preparedness point of view, than was Morgan Hill?

Are you people going to do anything differently after this earthquake, or do you think the citizens and the political people will do anything different now than happened after Morgan Hill? Is it — we just relearn the same lessons, or is it really different, and are we going to behave differently after this earthquake?

MR. MOUNTS: Well, actually, Commissioner, we had actually moved forward following Morgan Hill. We had taken some very practical steps in terms of our task force and getting the information out. That was very valuable. It increased our level to a certain — to a certain point beyond where we had been.

Admittedly, when you have an event like this, and this one was different, you know — it occurred in a different area, it affected us a little bit differently, it was a different time of day — it gives us new experience to deal with.

We're putting together a very large critique, probably not as nice as the one that Whittier put out, which was about like that (gesturing). But we're going to be putting together a very detailed critique, both of response and in terms of our preparedness and mitigation programs, that we'll then be building in.

The city council and the mayor both — have all made it very clear that they want to see these issues addressed, both in a budgetary sense and in a programmatic sense in the coming years.

It's again — it's building, and, you know, you can't — you can't prepare 100 percent because Mother Nature always comes up with one little twist for you. And I think that's what we're going to find in every event. We just hope to build upon the experience that we've gotten so far.

CHAIRMAN CLUFF: Thank you very much.

Dan, last question.

COMMISSIONER EBERLE: Thank you, Mr. Chairman.

Mr. Mounts, I applaud your initiation in initiating self-response to communities. But we did note that in one of the prior speakers, the city manager of Watsonville, also mentioned the need to coordinate and communicate and work on those areas, which you identified yourself.

He also stressed what I thought was a major point, of needing to follow the lines, the channels of communication, which, in your case, you couldn't do that. Did that present any problems? He noted there were problems when that didn't occur.

MR. MOUNTS: Yeah, the communications and the formal lines were very difficult, because I don't think we tested — they'd been tested, but I don't think under the stress that this earthquake occurred. You can run all the exercises — the County of Santa Clara, for example, and all the cities, had run an exercise in July where we simulated 48 hours after a major quake. But the — and, you know, you're able to simulate — you take the phone off, and you say, "All the phones are down for a while." But you don't have the stress of the moment upon you.

I think what we've got to do is go back and look at additional redundancy, so that when we call through the county to get to the state, we have some assurance that, you know, we're going to get through to the right people. And that's not placing blame anyplace; it's just a — it was a fact of the situation.

But at the same time, for example, in the Santa Cruz situation, using our ham operators and the plane that flew over, we were able to get in touch with Santa Cruz. I called up to Region 2, state OES, which is where I said, "Hey, look, you know, we want to coordinate and go up through the lines. We want to operate" — "Have you talked to Santa Cruz? We haven't been able to get through to them yet. We're trying to get somebody in there with a cellular phone."

The problem is, is sometimes you have to seize the moment. And if you've got that resource available, you know, you may have to go around those lines. Yes, strengthen them to a point, but then also realize that the situation may present itself where you have to go beyond it. I think that's what we're going to be dealing with.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Thank you very much for coming and speaking to us.

MR. MOUNTS: Thank you.

CHAIRMAN CLUFF: The next speaker is Assemblyman Quackenbush.

Assemblyman Quackenbush, welcome to our Commission meeting. We're pleased to have you here. And please let us know how we can work together to improve seismic safety.

ASSEMBLYMAN QUACKENBUSH: Well, thank you.

First, I have to commend the members of the Commission. This has really been your day in the sun, or weeks in the sun, since the quake. And this is one of those commissions that no one pays much attention to until these sort of disasters happen.

I think we have a window of opportunity to prepare the state much more than we had before, as people are paying attention to the idea of a disaster, and we can start really preparing the communities.

The day after the quake, I spent in Los Gatos, which was the center of the damage in our county, and, of course, completely contained in my Assembly district. And I saw the value of preparation in that town.

That had — that town had a very well-developed disaster response team. It was about as generic as you could get, but mostly geared toward an earthquake disaster, which is exactly what they had. They have a citizens' group that actually wears uniforms and is assigned to particular functions of relief in the city, whether it be communication or rescue or delivery of food and water. And I thought it was an excellent example for many other communities who were also hard-hit. And later on, in the State of California, they should take Los Gatos' example and go through the drudgery of putting that type of an operation together. When you need it, it's a real blessing.

I have to say that I don't have any real major complaints about how the state reacted to the disaster. I thought there was a tremendous outpouring of support from the state, from the county, from the cities. All the other cities and communities in Santa Clara County really helped out in Los Gatos. I saw Mayor McEnery come into the disaster relief center, I saw San Jose police officers, deputy sheriffs, I saw Orange County police officers, people who'd been here on a convention.

The one thing I think I've learned from this is the value of bringing more of the local entities involved in particular decisions, such as closing and opening of roads. We had a situation in our area, Highway 17 being closed, and then opened, then closed, and then opened under certain conditions, and there was a shifting back and forth of the rules of engagement up there, as to who could get through and who could not get through.

I think there are certain community sensibilities and things about a community that elected representatives, mayors and assemblymen and senators, know about an area that could help out CalTrans a lot in the future. And I would propose that there be more of a coordination immediately after a disaster. I mean, right after the disaster, between CalTrans, the highway patrol, and the local elected officials, be they state and/or local. I think that's an enormous — would be an enormous benefit.

As it was, we had a situation start out bad and kind of deteriorate. And then, at the last minute, a lot of legislators and local officials decided they wanted to get involved in the process, and that we almost — we almost gummed up the works. Luckily, CalTrans had it well in hand by then, along with the highway patrol, and we didn't.

I think we could have prevented all that and set up a nice plan to begin with, and as long as our input was in there, and move down together. As it is, CalTrans has responded brilliantly on Highway 17. I see that road opening very quickly. The weather has been kind to us. Although we don't have any water in Lexington to worry about, at least we'll have Highway 17 open.

Again, I think we've done a great job on this — on this disaster and responding to it, and I would just hope there would be a little more coordination with the local elected officials with the state agencies immediately after the disaster. That's the gist of what I wanted to say to you.

If there's any questions, I'd be happy to answer them.

CHAIRMAN CLUFF: Yes. Thank you very much. We appreciate your leadership in working with us.

With regard to the value of preparation, we've heard this over and over again, but preparedness, practice, practice, practice, and it certainly paid off. In many respects, we were very lucky in that this was really a reminder of what's yet to come. And when we look at larger earthquakes, or this same size earthquake, say, on the Hayward Fault, other closer in proximity to the major populated part of the Bay Area, we know we're going to get some heavy damage to our poorly-reinforced structures.

So, this is a good — as you said, a window of opportunity for us to focus on that.

One could say, based on the decisions that have been made about our progress on correcting collapse hazard buildings like the URM's and so forth, that society has decided they can't afford poor seismic safety.

Now, we all that are in this business want to do what we can, but how can we work together to provide the needed money through legislation and so forth, and finally make some major strides to provide the funds in some way to insure that buildings we know will collapse in some forthcoming earthquakes — how can we improve this?

ASSEMBLYMAN QUACKENBUSH: Well, I think probably the best thing that's happened is that people got the fear of God put in them. They saw what an earthquake can do. I think there's going to be a natural inclination of the funding institutions, who are buying these buildings and financing the purchase of some of the older buildings, to say, "Look, before we're going to back this type of a transaction, I want to see a seismic safety report, and I'd like to see all recommendations from that report being implemented."

I've heard a lot of reports from the real estate industry that many of their home sales have been held up as banks have wanted to take a second look at the facilities they're about to finance, to see if they are indeed as structurally sound as they could be, up to today's standards. And I think you're going to see a continuing emphasis on banks and financial institutions requiring that you go in and bolt the foundations down to their — onto the buildings, a lot of things that you can retrofit onto a building.

The idea of mandating these sorts of things fromt he state level, as I found out this year in one of my bills before Mr. Cortese's committee, is not real popular. It's something that's going to cost money. A lot of people don't — don't have any desire to spend any more money than they have to.

That's why I say we have that window of opportunity to push those types of things. And it may not be at the state level as much as it would be at the local level, requiring upgrades of buildings, in a certain time frame to buffer for their economic impact. I think that's something that has to be looked at, probably more at the local level, because every local area has a different type of seismic danger zone.

But I would be certainly happy to work with the Commission, in your new day in the sun, to try to build the awareness among local communities and businesses who are really focusing on this. I've made several speeches and talks to different groups in the Bay Area, and that's all they really want to talk about any more, is seismic safety and what they can do to prepare for the next one.

So —

CHAIRMAN CLUFF: Well, we certainly are going to seize on this opportunity, and our staff is already working with a number of legislators to present measures that will be costly, and what we found, even though people had the fear of God in them and so forth, their memory seems to fade very fast. And my guess is that once these issues come up, there are a lot of social tradeoffs, there are resources that are needed for other very important social issues. I'm afraid we're going to get to the point, and we're not going to be as successful as we would like to be, as we know we have to be to improve seismic safety.

So, it's — we're encouraged to know that you and others are reinforcing your efforts to help us, but it's — I think we've really got to cooperate and get more people on the bandwagon and get these legislative bills passed.

ASSEMBLYMAN QUACKENBUSH: One of the major battles in the past few years has been the requirement for sprinkler systems in high-rise buildings. And retrofitting that, it's an enormously expensive project, and there was — there was a lot of blood shed over it, but it is happening now. And I think the need is obvious. People — it's very difficult to argue against them, but I think now the need is obvious for seismic safety and being prepared for the next one, and it's coming.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: Yes. We'd be pleased to work with you and your staff on legislation, both ideas that you have to beef up the conditions that you've observed, as well as the legislative program that we're putting together. And so, we'll work with your Sacramento office.

ASSEMBLYMAN QUACKENBUSH: Thank you very much.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: I just want to mention, on behalf of my boss, Senator Alquist, in reference to at least the Seismic Safety Commission bills that he pushed through the legislature, that in the Assembly there are certainly a lot of swing votes when it comes down to a measure that needs two-thirds vote, and Assemblyman Quackenbush has been very great for the Commission's bills that were authored by Senator Alquist. And one in particular was an earthquake education project that we had brought up the last couple of years.

ASSEMBLYMAN QUACKENBUSH: Whew! I thought I was on the spot there for a second.

(Laughter)

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you for coming.

ASSEMBLYMAN QUACKENBUSH: Thank you very much.

CHAIRMAN CLUFF: The next speaker is Jon Glidden, representing Senator Morgan's office.

Jon, welcome to our Commission, and you'd heard the process, so I'll just let you say what you'd like for a few moments.

MR. GLIDDEN: Thank you very much.

And members of the Commission, on behalf of Senator Morgan, I appreciate the opportunity to be here today to share some views and observations that she made in the course of the last couple of weeks in the wake of the quake.

First of all, I would like to say to the Commission how much Senator Morgan appreciated the opportunity to work with the Commission two years ago with respect to the legislation to accelerate the implementation of the Strong Motion Instrumentation Program. And it was something that she felt strongly about, and she appreciated the opportunity to work with you all on that.

Rather than getting into the technical issues, which I'm sure will be addressed today, I'd just like to mention some of the observations that we had, working in a legislative office, hearing from members of the public calling in, and some of the observations we've made in going about this area over the course of the last couple of weeks.

First of all, in addition to the areas which were obviously hard hit, the Los Gatos area and the hills above them, which were widely reported in the press, the damage to the area, all up and down the peninsula, was very much hit and miss. We tend to overlook areas such as Los Altos Hills and up into Belmont and San Carlos, where there were not instances of widespread damage, but on a case-by-case basis, there were significant amounts of individual damage.

In Los Altos Hills, for example, there were some 30 houses that were substantially impacted. Several were total losses. And so, all through these areas, we have people who have had their life completely uprooted, and it's as much an impact if you happen to be just one or two people in an area that are hit as it is if you're in an area such as Los Gatos or up in the Redwood Estates area, where you've had an entire community that's been substantially damaged.

Another reaction we had and heard from universally is about the quick response of the emergency teams, whether it be police, fire, the Offices of Emergency Services, the National Guard. There's widespread appreciation throughout the area, I think, for the professionalism and the planning that was demonstrated in the manner in which all of these agencies responded, in a very quick manner.

The FEMA offices were open in a very quick way. The legislative bodies responded very quickly. There was, I think, a feeling that people were responding in a very quick and professional manner.

But there are still a lot of ongoing problems out there, even as we speak. I was up in the Redwood Estates area and the Idylwild area, Idylwild Water Company area, around Lexington Hills, last Thursday and Friday. There still is no water up there, throughout much of that area above Lexington Hills and up into the Redwood Estates area. There are many people still without homes. There are many people who have no power. There are people who are still having to rely upon food that's donated and provided through the San Jose Conservation Corps and other agencies. There's still very primitive conditions, living conditions, for many people in this area, which continue to need response and ongoing service.

San Jose's Conservation Corps filled many of the gaps in dealing with people, helping them with problems such as cleaning out their houses, putting material into storage for them, cleaning out stale food that was left in refrigerators, and, obviously, had become decayed with the loss of power. They're helping to fill in the cracks that many people on television in this area saw these tremendous chasms leading up to houses, and into and through houses. The San Jose Conservation Corps teams have been up there filling in those chasms with clay, and I think they are to be congratulated on the outstanding work that they have done and are continuing to do until this morning.

I think we need to extend our appreciation to a lot of companies in the private sector who donated materials. Safeway Stores have donated food to people up in that area. When I was up there on Friday evening, MacArthur Park restaurant in Palo Alto had donated staff and food for the evening. They were feeding several hundred people up there, even as late as Friday night. And facilities such as — services such that are extremely important, and we should be very appreciative, I think, of the response of the private sector and the nonprofits, such as San Jose Conservation Corps, that have helped us through all this unfortunate set of problems.

Some of the basic problems that I think emerged, from the state level, that need to be dealt with on an ongoing basis, are, number one, getting the dollars flowing quickly. I mentioned earlier I think there's a perception that the FEMA disaster assistance centers were in place very quickly, but the dollars are still now flowing, in terms of loans.

The Idylwild Water Company, up in the hills, they need storage tanks, they need to restore their pipelines, they've put in all the paperwork, but the dollars still aren't there,, through loans or through grants, to get the work done. And coming up with some sort of structure to provide bridge loans or some sort of advance dollars to get things going on an immediate basis is something that we need to focus upon.

I've heard from a number of city managers and mayors all up and down the peninsula that one of our basic areas of concern needs to be responding not just to the disaster that actually happened, but to the disaster that almost happened. There were a lot of towns that felt that their infrastructure was in jeopardy had the quake been a little stronger. Had circumstances been a little less fortunate, there would have been major damage to water lines, to sewer lines, to water treatment plants, any number of areas — roads — any number of areas of infrastructure, all up and down the peninsula.

And so, we need to put some effort into retrofitting and planning for what might happen again tomorrow, as well as what did happen yesterday.

The other issue that we hear a lot about is with respect to the building permit process. That, of course, is a matter principally for local government, but it's — I just want to mention that we do hear a lot about the process of actually getting into demolition and rebuilding. There's great concern about the time lag and the process for completing that.

And, finally, in planning for the future, I think the Senator would want to indicate that we need to continue to do such things such as are happening today, to share information. I mentioned earlier the work that the Senator had done with the Commission on the Strong Motion Instrumentation Program. There's a continuing need, I think, to share information that we develop and analyze it, so that some of the information we have and some of the ideas that we develop get translated into preparing for a disaster that might happen in the future, so that we are prepared next time around.

Even to a layman, it was obvious that one of the significant differences in whether or not people and their property suffered damage was the manner of construction of buildings, the manner of construction of infrastructure. We see it throughout Santa Cruz County and throughout this area. In addition to where the fractures happen to be, one of the great distinguishing factors in whether or not there was damage or not depended upon how particular buildings were structured.

And we need to continue the good work that the Commission is doing, and that CalTrans is doing, and other agencies are doing throughout the state, to make sure that we plan and design in such a way that, in the event of a recurrence, the damage will be minimized, as it was in many instances this time around.

Thank you very much, members of the Commission. I'd be happy to respond to any questions that —

CHAIRMAN CLUFF: Thank you very much, Jon. We want to thank you for coming over here with the Senator's views, and we look forward to continued cooperative efforts, and we know that will happen.

Perhaps there are further questions from other commissioners.

Bill Iwan.

COMMISSIONER IWAN: Well, just one comment. I want to thank you. I understand that you were very instrumental in the Strong Motion program and the enhancement of that, and many of us appreciate your work on that, and we thank you for it.

MR. GLIDDEN: Thank you. Thank you very much.

Thank you.

CHAIRMAN CLUFF: The next item is Teddy Morse, the Santa Clara Water District.

There are some slides, I believe, that will facilitate this next presentation.

We're pleased to have you with us. Earlier — and you may not have been here, but earlier we had Dick Volpe —

MS. MORSE: Right. I knew he was coming.

CHAIRMAN CLUFF: — who gave us —

MS. MORSE: Right.

CHAIRMAN CLUFF: — a summary, a very nice summary, of the effects on all dams in the affected area, including some of yours.

MS. MORSE: Right.

CHAIRMAN CLUFF: And we were pleased to have him with us, and we look forward to your comments on how we can work together to improve seismic safety.

MS. MORSE: Okay. First of all, I should give you a little background on what the water district does in the county. Our — we're a public agency, established by a state legislative act, and our job in the county is flood control for all of the county and wholesale water supply. So, we bring water into the county and sell it to the nine city water departments in this county and three private water companies. So, that's our role.

We have an emergency operations center, and the emergency we usually face, as the flood control district, is a flood, and we've got a little bit of preparation time, because we know that it's going to be coming, and we can see for a few days, normally, we're going to have that problem, so we've got time to get staff and work schedules organized, and so on.

In the case of an earthquake, there is no warning and no time to get things going. So, we do have some preparations that we've got already in place that automatically occur. One of those is, a helicopter is automatically dispatched to our main office, and all of our facilities are flown, by our technical people. We start at the bay levees and move on down across — we own ten reservoirs in this county, plus three water treatment plants, and hundreds of miles of underground pipeline. So, those are flown immediately.

The other emergency that we have already in effect is that our personnel who operate our water supply system, as far as opening and closing valves at the reservoirs and so on, have radios in their cars, and they are dispatched immediately to do the work on the ground.

Luckily, at the October 17th earthquake, if there can be anything good about an earthquake, was the time of day it hit. Our personnel were either just leaving work or still at work. There was still enough daylight left to do an aerial flight of all our facilities and see if everything was okay. And with the personnel still at work or just leaving work, those who were in their vehicles, we were able to reach by radio, and instead of heading home, they headed out to the various sites to do their jobs.

Now, the worst thing that happened to us was that our telemetry cables — and that allows us, from our Rinconada Water Treatment Plant in Los Gatos, to open and close our valves by computer — they were damaged. Los Gatos was down for a period of time, our Rinconada plant. So, for that reason, everything had to be done manually. But, again, we had enough daylight, and our crews were sent out there immediately, and they were opening and shutting valves manually.

(The following remarks were accompanied by a slide presentation.)

MS. MORSE: This slide shows our reservoir that's closest to the epicenter of the quake. This is Lexington Reservoir. And you can see, on the righthand side there, there's a little bit of water creeping down toward the reservoir. That is a — there's an underground pipeline coming from San Jose Water Company, which is the largest private water company in this county — they service about 745,000 people, and they're our biggest customer — they have a pipeline that brings water from their Austrian Dam down through our reservoir area, and it diverts along the lefthand side. I didn't bring my pointer today, but along the edge of the reservoir there, they have a leak there.

In fact, their Austrian Dam — and Dick Volpe may have mentioned that to you — is virtually being reconstructed because of the earthquake.

Our dams, which Dick may have also said, are constructed earth dam, and they're constructed to withstand an 8.5 quake. So, we came out real good on this one.

But anyway, they have a leak there at that pipeline.

Again, our reservoir levels are very low, so the cracking really shows up. Maybe it wouldn't be as visible — and I'll show you that cracking in a minute — if it wasn't for the fact that the ground is so dry, with us now going into our fourth year of drought in this county.

Up in the upper lefthand corner is the top of the reservoir, and on the other side of that would be the spillway.

Now let's see if I can get this to work here.

Okay. This shows you our reservoir. That reservoir actually shifted, and Dick may have talked to you about that, about 10 inches. This is a measurement device at the top of the reservoir, and that, the orange-painted part, was actually equal with the roadway. And you can see, with the reservoir slipping down a bit, that is sticking up above the ground.

And that reservoir is designed to do that, so it reacted just the way it should react in an earthquake.

This is the cracking along the reservoir. And we got rain right after the earthquake, that following weekend, so we were required by the Division of Safety of Dams to cover the cracking, and that's what we did.

This is the Calaveras Fault area. We are now bringing water in from the federal U.S. Bureau's Central Valley Project. And where that project crosses the fault line, that fault area was built to withstand, to give — have some give-and-take to it. This is the first real major quake in that area, since we've been receiving water from them, and we did have a problem.

You can see the water on the lefthand side, and it also goes under and comes out on the other side. And we're still trying to get that repaired. There's two parallel pipes going through there. One shifted and cracked, and we have the leaking, and one didn't. So, it didn't affect our water supply. We're still able to get deliveries and keep things operating.

This shows — the night of the earthquake, we were out flying right away, and you can see where the PG&E tower is. There's some water coming out. That was one of our valves from our underground pipeline going through.

As soon as we got radio contact and found out that this was happening, as the public information person, then, I went on the radio to let people know that they should bottle some tap water, because we didn't know if, during the night, they would lose service or not.

This is near our Almaden administration building, just a sample of a gravel dam. We have these all up along the creeks in our county to help us in our recharge program. And that particular dam failed to some degree during the earthquake.

This is our Penitencia Water Treatment Plant. We have three treatment plants in this county. Penitencia, on the east side of the county, had no damage whatsoever, and it enabled us to keep our water treatment operation going on throughout the earthquake. In fact, none of our customers lost water service through the earthquake.

This is our Santa Teresa Treatment Plant. We bring imported water from the federal project into Santa Teresa. In fact, where I showed you that leak on the Calaveras Fault, that's where we're bringing water in. We did have a leak on our pipeline. We dump the water into one of our reservoirs, and then pipe it from that reservoir to this plant.

The night of the earthquake, we discovered a leak on that pipeline, and so we thought there would be a possibility that we would not be able to deliver water from this plant for a while. In fact, we had to stop deliveries for about seven hours.

But there's always water in a clear well, treated, ready to go, so no individual customer was actually affected by the fact that it was seven hours before we got the plant back on-line.

This is our Rinconada Water Treatment Plant, the plant in Los Gatos, nearest the epicenter, as far as our facilities are concerned, and this is where we had our major damage.

These are clarifier tanks. The tank on the lower righthand corner was empty, down for our — just our normal painting and maintenance that we do, especially in the winter months when the water demands are lower. There was no damage to the tank that didn't have water in it, but the other three, the wave movement caused by the earthquake caused significant damage in the other three clarifiers.

There are arms that come out in these clarifiers, and it stirs the water up — this is the first place our water goes for treatment — and you can see, right in the center of your picture, the lower part there, that an arm has dropped down. And this is what happened with the wave action, is it bent and twisted these arms, caused them to drop down, took the center structures and shifted them off their base.

You can see, now that we've gotten the water out, you can see the pipes, that it actually shifted and broke apart. And here's that center structure pulled off of its base.

This meant that we had — of the four clarifier tanks, we had three of them out of operation for about 48 hours. Again, the water demands are lower this time of year. That helped us. The other thing is, most of our customers who get water from Rinconada also have an option of operating their wells. So, though our plant was down for a time, they could draw from well water.

Also, again, the clear wells that hold the water that's already treated, that well was full, had plenty of water in it, and no damage to it, so we could deliver water out of that. And we got the plant back on-line before anyone actually lost service.

The other thing we did is cooperate with other agencies in our county. Now, the City of Saratoga had some damage, and they needed some heavy equipment and some people to operate it, and that Gradall in the foreground is one of our pieces of equipment that we sent out to the city.

I might say that we are working on our water treatment plant. We're looking at about sometime after the first of the year to start getting at least one of our other clarifiers operating. We still are operating the treatment plant, at about 35 percent of capacity, still making water deliveries from it. And as I said, companies can draw from their wells, so the individual consumer doesn't really notice that there is a problem.

The only thing in our county that they're noticing is that we had to close down the last recreational reservoir that was open, because it had water in it, because our treatment process is a little different right now, and the Department of Health doesn't want body contact sports on that reservoir.

We feel our system worked pretty well, as far as we've got radio contacts with people, which we found out was critical, because the telephones did go down. In fact, we were able to contact all of our water retailers, except for San Jose Water Company, and we sent a person out with a radio to one of their offices, and then they communicated with us from radio.

We're now in the process of purchasing more radios, because we realized that's going to be our only form of communication in a disaster like this.

We were able to get messages out to the public over the radio stations about collecting some tap water, because we were concerned they might lose service. Los Gatos lost service, as far as their retailer, San Jose Water Company, was concerned.

We feel the system worked pretty good, but there are still some more things we need to work on, and the main one with that is communication. We were unable to maintain communications with the county Office of Emergency Services. Even though we had radios, we weren't able to keep contact with them.

Eventually we sent a staff person down there, and that's probably how we will do it from now on. It's just automatically dispatch someone to that office so we can keep communication going.

We've got a lot of work to do, because an earthquake is something we — we haven't really — I mean, you talk about it, but you never really prepare the way you need to. So, we will start having some drills.

The other problem with us is, people know — we have an emergency crew, and they know, like myself, that your first job is the district, and you go immediately — I didn't go home — I went right to the emergency operations center, so — opened it up and so on. That's real hard for people to do, though, because you don't know what's happened to your family. Is your family okay, and what's going on? So, we need to work on that too, some way that our emergency people will be able to know that their families are okay, so that they can proceed with the jobs that they are supposed to be doing for the benefit of the whole county, without — without that concern.

I think that's an overall of exactly how it worked.

CHAIRMAN CLUFF: Sure. Well, hold on for questions.

I wanted to ask you, you showed a photograph of the water main that had broken —

MS. MORSE: Uh-huh.

CHAIRMAN CLUFF: — could you give us a few more details on exactly why that —

MS. MORSE: They have these air release valves, and I don't know, not being a technical person myself, exactly what happened on the release valve. I know that we're able to shut off the system manually, because our telemetry was down, and there was just a minor repair to get it back operating again.

We have these stations periodically along the pipeline — they're concrete block stations — you can see them above ground — and that's our access area, and that's where the air release valves are located.

Actually, it turned out to be a real minor problem. The people who live near that, who got their swimming pool inundated with the silt and mud, don't think it was a minor problem, though.

We actually lucked out in this earthquake, as far as damage. I mean, we had very minimal damage. And even with our treatment plant, which was — to us, that's pretty major — we were still able to operate. And water, of course, in a crisis like this, is — there's — it's so important.

And no damage as far as water quality — we were able to maintain the water quality in the county without any problem.

CHAIRMAN CLUFF: So, the thing we heard so much on the news about the water shortage in Los Gatos was your facility?

MS. MORSE: No. Now, that — what happens is, we sell the water to San Jose Water Company, and then their mains that deliver that water to the customers, that's where the problem was.

The section of Los Gatos actually is — San Jose has that Austrian Dam, and they collect rainwater in that dam and run it through their Montevino Treatment Plant, and deliver that particular section of that town with that water. They don't even go through us for that particular system.

So, their system failed, but ours was still up.

CHAIRMAN CLUFF: Could you tell us briefly how it failed?

MS. MORSE: They had something like on the order of about 33 main breaks, and maybe 100 leaks. I mean, they had a big problem, and the — because they were so close to the epicenter, Austrian Dam and so on, they lost power at their treatment plant, the Montevino plant. It just couldn't handle that, that heavy an earthquake, being so close to it. And they had major problems for — I believe they had some people out of water for about 48 hours.

CHAIRMAN CLUFF: Do you know if their breaks were like yours, that were fixable quickly, or were they more substantial than that?

MS. MORSE: No, they took — right, they were more substantial. They were working — they had crews, just like PG&E has to do in emergencies — they had crews out there, night and day, for several days, getting people back on-line. So, no, they were more substantial breaks than what we had.

Ours were more just leaks, where theirs were actual breaks.

CHAIRMAN CLUFF: Do you know the nature of those breaks? Were they due to ground failure in some way, or —

MS. MORSE: Now, that I don't know, yeah. No, I haven't — I haven't seen a presentation by them, so I don't know on that part.

CHAIRMAN CLUFF: Thank you very much.

MS. MORSE: Okay. You're welcome.

CHAIRMAN CLUFF: Any questions?

COMMISSIONER SCOTT: Just a quick question. You mentioned a gravel recharge dam —

MS. MORSE: Right.

COMMISSIONER SCOTT: — and it sounded like they probably are pretty susceptible to strong shaking. I was just wondering how many of those there are. And if they failed, would there be any unfortunate consequences, other than just the loss of the water?

MS. MORSE: Shouldn't be, unless the creeks are really full. And we don't usually have the dams up when they're really full. The way the system works is, we put them up in the springtime, and then take them out in the fall. And because they're up and down all the time, it is just a loose structure of dirt.

In fact, the one that I showed that failed had just been up a few weeks. We had taken it down because it is winter, and then we're looking at a fourth-year drought, and we got permission from the Department of Fish and Game to let us put it back up again.

So, I think that's probably the reason, they come down, up and down. And if they're in there, again, as I said, the water levels are low. So, it shouldn't be a problem.

CHAIRMAN CLUFF: Commissioner Iwan?

COMMISSIONER IWAN: Yes. I wonder if you have any plans to do any kind of studies, research studies, on the performance of your dams, to determine whether or not they performed the way they were designed —

MS. MORSE: Okay.

COMMISSIONER IWAN: — and if so — or if not, what corrections you might do to the analysis.

MS. MORSE: That's — Dick Volpe is working with us under a contract, and that's just what he's doing. And so far, the reports he gave, a report to our board yesterday, and they did perform the way they're designed to perform. And he gave a glowing report about how well they're constructed and how well they did.

So, we feel real confident about what's going on with our dams.

COMMISSIONER IWAN: I guess the kinds of questions that I would hope would be addressed would not just be, "Yes, they behaved wonderfully," but I think now there's some data that were obtained from some of these dams where there were some instruments —

MS. MORSE: Right.

COMMISSIONER IWAN: — to correlate those with the analysis of the dams, and really, to go back and verify the analysis based upon the observed damage, not just to say that they behaved wonderfully, but to use this as a means to verify the analysis, I think, would be very valuable.

MS. MORSE: Well, I'm sure that he's going to be doing that.

And we have — which you probably are aware of — we've got to maintain these dams according to state Division of Safety of Damsrequirements, and they're constantly, you know, checking us and telling us things that they feel need to be done. And according to Dick's meeting with them, which was last week, I believe, they're also pleased with the fact that our dams are constructed the way should be for earthquake standards, and that we are making the necessary changes whenever we know what they're supposed to be.

So, I think we're up to date on that, and we won't get behind, because that's our major job, is to make sure they work correctly.

CHAIRMAN CLUFF: Commissioner Kockelman?

COMMISSIONER KOCKELMAN: I visited your Rinconada plant —

MS. MORSE: Okay.

COMMISSIONER KOCKELMAN: — in Los Gatos after the earthquake with a couple of friends, engineers. And your general engineer was, you know, really hospitable to us, and he showed us some of the foundations, the cast foundations, and he showed us that there was rust on the breaks, and he suspected that maybe previous earthquakes in that area had caused the fractures to start developing.

So, I was wondering if it's possible for you, on routine maintenance, to go a little further on the rest of the facilities and look at those.

MS. MORSE: We will be. In fact, the plant has gone through a lot of earthquake work, as far as — we've put — because all — that's all computers there for operating the whole telemetry system — we've got the flooring — there's a space in between the flooring with the waters running under it and things for earthquake, and everything's tied down and all this.

And now that we're going to have redo those clarifiers, we're going to do some checking into what can we do to prepare them for an earthquake of that magnitude, because they weren't originally built for something like that. So, that's what we're investigating at this time.

COMMISSIONER KOCKELMAN: Thank you.

MS. MORSE: Uh-huh.

CHAIRMAN CLUFF: I have another question.

MS. MORSE: Sure.

CHAIRMAN CLUFF: As you mentioned, and we've experienced with a lot of other presenters in the hearings, we were lucky in many ways, and often you make your own luck. But there were some lucky things — lucky that this occurred during the dry season, lucky that the reservoirs were down, although, from another perspective —

MS. MORSE: Yeah, I know.

CHAIRMAN CLUFF: — you can question that.

But could you talk to us about perhaps some of the complexities that, given the reservoirs being up — these are kind of some "what if" kind of things — but I could imagine perhaps you people having Lexington Dam downstream from Austrian Dam, that there may have been a need to — should there be a problem at Austrian Dam, to maintain a reservoir capacity in your dam to accommodate a potential failure.

MS. MORSE: Right.

CHAIRMAN CLUFF: You might be asked to keep your reservoir low, which is against your general principles of having water. Could you kind of go into —

MS. MORSE: Well, it's not —

CHAIRMAN CLUFF: — some insight into how you work with the other water districts and the Division of Dam Safety —

MS. MORSE: Sure.

CHAIRMAN CLUFF: — to maintain this balance?

MS. MORSE: Okay. Our reservoirs capture the rainwater all winter, if we have rain, and then we start making releases in the springtime. And we're designed to make reservoir releases. Especially with Lexington, we can release it all the way over to our Rinconada Treatment Plant and use it for treated water, or we can release it into our groundwater system. And we have 700 miles of creeks in this county, 18 various percolation facilities, so we've got a pretty massive groundwater percolation facility that can handle a lot of water.

So, we feel pretty confident that — and also with Dick's report to us that the spillway would have held up — I mean, it could have overflowed, because we're constantly making sure that we can reach 100-year flood capacities with each reservoir and through our creek channels and so on. With three years of drought, we've gotten a lot of flood control work too, work done lately.

So, even if it had been full, the spillway had gone over, and Austrian had dumped in, we feel we could have handled that water, especially this year, because we're bringing in all this imported water, it seems, to the treatment plants. We could have used our local water and just shut off the imported system for a time.

The only thing would be if every single reservoir in the county was full, and it was raining, then we're going to have some flooding. I don't see how we can get around that, because the capacity of the creeks will — it will just be — that would be a problem. But that's the worst-case scenario.

And we're pretty well prepared for flood in this county. We've got all kind of emergency systems set up for when we're having flooding, because that's the kind of emergency we're used to handling. I think we could have a handle on it. We'd like to see a little of that right now, in fact.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Well, thank you.

MS. MORSE: Oh, you're welcome. Thank you.

CHAIRMAN CLUFF: And we have the next speaker to be scheduled at eleven, which is ten minutes from now.

Perhaps there are some issues or points the commissioners would like to kick around, now that we have a little bit of a lull in the agenda. A lot of things have come up over and over again.

Anyone want to ask — or make a statement?

(Pause)

COMMISSIONER KOCKELMAN: I have a question.

You know, clarifers, water treatment, are a critical facility, and apparently, this was a saiche action that put the three clarifiers that were full out, and I was wondering, you know — the issues that we'll address in the next couple weeks — what do you think the Commission would do about advising the other the other water treatment districts throughout the Bay Area of this kind of experience?

This is a couple weeks down the road, but you're usually a couple weeks ahead of the rest of them. What do you know about it?

CHAIRMAN CLUFF: Well, perhaps some of the engineers have more experience than I do, but I worry about safety in reservoirs and tanks and so forth, and I've observed a lot of that, the effects of that, from earthquakes.

And as I understand it, there are engineering solutions that aren't too difficult to implement. On closed tanks, one needs to have venting so that you don't get a vacuum created.

In fact, that was an effect that occurred at PG&E's Moss Landing Power Plant. A bottom well felled and emptied about 700,000 gallons of water in just a few minutes. And because of the lack of venting in the top, it sucked the top of the tank in.

Usually, because of saiching — and this is somewhat controversial — but sometimes, in uplift, if there's a strong vertical component, you get an elephant's foot type of deformation at the bottom of tanks. I looked at quite a few tanks and saw none of that.

I know there are engineering solutions of anchoring and so forth. I don't know. I think we have pretty easy solutions to saiching. I don't think —

COMMISSIONER KOCKELMAN: As a policy, what do you think the Commission ought to do with the results of our hearings, as far as those who participated —

CHAIRMAN CLUFF: Oh, for this —

COMMISSIONER KOCKELMAN: — yeah, in sending it out?

CHAIRMAN CLUFF: Well, that's a good issue, I think, to talk about. I was talking to Tom about it last night. In fact, I think I even gave some of my own personal views on the record yesterday, and that the transcription of our first hearing is 600 pages —

THE REPORTER: 357 pages.

CHAIRMAN CLUFF: 300 pages, of just the one day in San Francisco.

So, if we look at that in terms of all of these hearings, we're going to have a pretty sizeable, impressive bulk in the document, and it would seem to me that this deserves some analysis and evaluation by our staff and our commissioners, so that, up front, we give the benefit of our analysis, kind of summarize the facts, the issues, themes that came up over and over again, like communications and preparedness and practice, practice, practice — and, you know, a lot of the very important messages kept coming up —to provide that important summary, and also provide a roadmap, so that those who want to use that document for their own analysis will know where to find certain things, and so forth, and that's going to take us a while.

But I — my view is, this document will be an extremely useful document, in ways that we will never imagine that it will be helpful to promote seismic safety.

So, maybe we could spend this next few minutes to talk about — get Tom's ideas and others' about how we might go forward once we get all these transcripts.

EXECUTIVE DIRECTOR TOBIN: Well, Mr. Chairman, the transcript report itself could be close to 2,000 pages in length, when we finally finish the hearings we have. And I'm not so sure how much it costs to reproduce 2,000-page transcripts, but I know lawyers do it all the time. But it's nothing that we can really afford to do in very large quantities.

So, what the general thought that I've had, without talking about how we can do this mechanically with the rest of the staff, is that as we receive the transcripts, we'll give authors a chance to read through them and make corrections. We'll do extremely light editing, just so that its appearance and its — it appears acceptably and that it's readable.

If we can go it, I'd love to have a graduate student or somebody, as they go through that, prepare us an index from some key word that we put together, to give readers some sort of roadmap to where information might be.

But I think the most important use of this for the Commission's purposes is that this will be a goldmine of information for a more comprehensive report that we would do. We would reference this report in the more comprehensive report.

But, you know, we just cannot try to publish a 2,000-page transcript. The report — we'll make copies and make it available, and see if we can sell it in some way, provide it to, perhaps, some university libraries, so that it's available around — just willingly give people copies of particular sets of testimony. But it would be just an awful job for us to, you know — with our facilities, to put out 2,000 pages worth of transcripts.

But the more — but perhaps more important will be the report that we do. As I mentioned a couple days ago, I've started doing an outline of issues that are coming up that are coming up, and we'll continue working on that and have that available for the Commission at the December meeting. And this outline of issues would then serve as a problem statement for in-depth work.

Some of the work would be going back to the transcripts to pull out information, but a lot of information or things that we want to run down, reports that we'll want to see in more detail, we'll have to use consultants to help with that area.

Ultimately, by January 1st of next year, I hope to have a fairly comprehensive — a very comprehensive report completed, and a more concise, readable, action-oriented document that has the lessons that have come out of this earthquake, and recommendations for what to do.

But that's — that's just a —

COMMISSIONER KOCKELMAN: In addition to asking —

CHAIRMAN CLUFF: Speak into the microphone, please.

COMMISSIONER KOCKELMAN: In addition to asking the authors to do editing and correct their figures, would you be comfortable with telling them that the Commission would like to publish it, and to please reduce their testimony down to four pages?

EXECUTIVE DIRECTOR TOBIN: Well, I'd be comfortable doing it. Whether the authors would do it, I'm not so sure.

You know, we have done something similar to that with transcripts before, and it takes a very long time to do it, our social and economic impacts report. It must have been months of trying to get edited copy back out of some of those people, because it falls low on their priorities.

COMMISSIONER KOCKELMAN: Yeah.

EXECUTIVE DIRECTOR TOBIN: It becomes a difficult — with the number of speakers that we've had, about 100, that would be very comfortable —

COMMISSIONER KOCKELMAN: Yeah. I was looking at it from my standpoint. If I came and testified kind of loosely for ten, twenty minutes, and you asked questions, and then you gave me a chance to edit it, and so you always have the original record, and then you said to me, "Bill, we'd like to publish your think worldwide. We'll give you a week to cut it down to four pages," I've got all the edited stuff right in front of me. I could cut that down to four pages. And then you could put a caveat in and say, "His original testimony is available at the Commission's office as cost of reproduction," just that guy's testimony, you know.

EXECUTIVE DIRECTOR TOBIN: That's sort of — we thought of something similar to that, and that would be that we'd invite papers from particular parties or organizations on some topics, and some of those might be speakers we've heard from who had particular insights. But I think what we'd have to do is to guide our efforts by what important issues have come up, and then if we've had speakers who have had important insights for us, rather than to spend our time trying to ask them to redo their work, we would focus on those who provided us with good information.

CHAIRMAN CLUFF: Bill Waste?

COMMISSIONER WASTE: Does this work? Here we go.

I hate to disagee with my good friend, Bill, but my own observation on this kind of material is that if there's any editing done, any reduction done, we want to do it, because we understand — I know it's a lot more work — but we understand what the thrust of our report's going to be. And to allow the speakers, whose backgrounds are diverse, and whose interests are diverse, to select out what we might want, I think, would be counterproductive.

Sorry, Bill.

CHAIRMAN CLUFF: Let me just add to that, Bill. I tend to support that view, in that we had some very candid, open, glib testimony that we want to preserve. And what might happen is that some of these people might have second thoughts, once they see how open they were in some of their comments, which we want to maintain. And all of a sudden, it would be a kind of boiled-down, not-interesting-reading document that we don't want to do that to.

We want it to be exactly like — a number of the witnesses provided some extremely exciting dialogue with — just we want to preserve that.

Randy?

COMMISSIONER PESTOR: Yeah. I concur, especially, I mean, if we're having the expense of having a recorder and transcripts, right? I don't think that there should be any changes by, you know, the person giving the testimony or staff. I think we ought to just have each transcript, and if anything, maybe staff doing an executive summary of what each one of the testifiers said and the points that were raised, and then, if anybody wants to go back to the transcript, then they can do that.

But I don't think we should alter the transcript, staff or the people who are doing it. Otherwise — I mean, that's — that's why we have this person down here.

CHAIRMAN CLUFF: Well, I think we probably have the next speaker, next two speakers.

Bob Lanning, of Hewlett Packard. Mr. Lanning, would you care to come up to the speaker's —

EXECUTIVE DIRECTOR TOBIN: While Bob is coming up, let me add a further introduction. Bob's also now the chairman of the BAREPP Advisory Board. He's been involved in BAREPP since its beginning, so he's an old friend of the Commission.

CHAIRMAN CLUFF: All right. Welcome.

MR. LANNING: Thank you.

We have some slides being loaded, so it'll take a few moments for that.

I might, I guess, lead into it by what happened that afternoon or that evening. I arrived — this is on the 17th, the earthquake — I was off that afternoon and went to — got to work about eight o'clock, really had little difficulty at all with getting to work, because I was going the opposite direction from the commute. You could sure see a line there, trying to get home.

We got the place in order enough to where we could start processes up at the corporate offices, that is, telecommunications efforts and computing efforts, back on-line by about one o'clock in the morning. I took a local hotel. Luckily, credit cards were working and I was — had a big tank of gas — had little cash in my pocket, but at one o'clock in the morning, the hotel manager didn't care if the phones were working or not. He just ran the card through.

So, the next morning, I arrived back at the site about 8:00 a.m., delaying a little bit, waiting to see what the news was having as an overview on how big the impact was.

We had arranged, prior to this earthquake, luckily, through our earthquake preparedness program, to have a structural engineering firm — we had picked Degenkolb — to do that work for us, and they're — they were on retainer, and they were to make their best efforts to get to our corporate offices in such an event as this, and then I would take them in tow and we would begin moving about at the buildings, to look at the buildings and see just how bad we were, in fact, hit. And they got there at 7:00 a.m., an hour before I did.

And prior also to this effort, we had evaluated all of our buildings to see what — how they would fare according to the ATC 14 methodology, a little bit modified. And — and so, we had files on every building.

Basically, we have 110 structures in the South Bay, in the affected region. The 110 structures also included the links between larger buildings, but we had to look at them as separate buildings. So, in real fact, buildings housing people is probably on the order of about 80, 75 to 80 buildings.

So, we loaded those files into the car and began our review of the buildings. It took ten days to get through 110 buildings, and had ATC 20 just delivered, and went around trying to use that as a time limit, at least, to look for those obvious signs of physical structural damage.

We tried to focus on structural stuff. We wanted the local facilities departments to go ahead and begin clean-up if we found it to be safe. So, we had two licensed engineers in hand and went around to make those observations.

Mind you, we blew it on one, and we blew it big-time. The second building we reviewed is our Building Number 26, and that will come up here in the presentation a little bit later.

We went through — we had that targeted — there's two — two forms of reports we had made after we had done this review of all our buildings, and one of the reports was how quickly could we reoccupy the buildings — in two weeks or less, in 60 to 90 days, or in excess of 90 days? Real broad-brush.

And that particular building, Number 26, did come up as the highest damageable building we had. We did not expect any structural failures in it, and that's why — where we got surprised.

Although we walked around in the attic and looked at the brace-frame connections and interstitial space, the failures occurred between those locations, and they were only found about a day and a half or two days later, by a facility person putting ceiling tiles back in place, and couldn't get one up against a wall. And the wall was deformed.

Well, you know, walls are frequently crooked, so he at first assumed that the wall was just that. But when he got inside, saw that the beam was pressing against the wall, and called us back — and we're on a car phone, and so, you know, we went back to take a look, and we were pretty disappointed. We're out of that building for probably about four months.

And it's all repairable, and it's being — we have two groups — we have structural engineers working on them, and you're going to hear from Rinne & Peterson, I understand, here, just shortly after that. So, they're working on it with us and putting that building back together for us.

Well, let me go ahead and start with the presentation, if the slides are ready.

(The following remarks were accompanied
by a slide presentation.)

MR. LANNING: And so, Hewlett Packard, how bad were we hit, and were we ready?

Personal injuries — no deaths, no serious injuries. In our Sunnyvale site, somebody got a broken foot. There were some sprains and fractures, head injuries, and miscellaneous damage. There are injuries, not — not of any real consequence. I would hate to have been one of those people, but we certainly didn't have any substantial.

Physical plant damage, we have 110 buildings in the Bay Area. That represents 8.5 million square feet. Of those buildings off-line, there are three, and that represents about 3 percent — so, not too bad.

Nonstructural damage, things that we pretty much expected — "we" — that means I and those affiliated with the earthquake program. Those who were facilities people did not expect to see ceiling damage. It's — they're just not used to that. But, obviously, T-bar ceilings are susceptible to pretty substantial damage.

Water leakage from sprinklers, reheat boxes — reheat — or water heaters and reheat coils — those reheat coils are used at what are called mixing boxes, where the air comes through the air conditioning system, and then it goes through a control box to either warm it or leave it that temperature and dump it down through several diffusers into the office areas.

Well, those all had rigid connections, and they were pretty crummy, and half of them were leaking water, some of them pretty big. And so, all of that water was coming through the ceiling tiles, and you know what happens after that.

Glass breakage, plate glass and film glass. I had — in our corporate computing center, the corporate offices, filmed with a 3M product, shatter-resistant glass, about 30 or some-odd panels of 4-by-8 sheets of glass that were plate, and five of them broke. And of the five, four of them came out of their jambs. And just, basically, they crumbled up enough so that their outside dimension was smaller, you know, so they weren't held in the jamb any longer.

And, unfortunately, though, they fell across desks and chairs. Those people were either away or under the desks at the time. So, duck and cover definitely is something to do.

Now, looking at other buildings, that film did perform, because when we look at other buildings where we had broken glass, it exploded, and we get that emplaned — I guess it's compression on the glass — it was traveling 20 feet away. And in one of our buildings that we're still out of, Number 18, glass — almost a point like that (gesturing) — still wedged into the sheetrock in a 5-foot-wide stairwell.

So, you — if somebody had been in there, that would have been pretty serious. That suggests what the force is when that glass breaks away.

Building systems, broken anchorages, you know, our fan systems moved about. Usually, obviously, in the higher parts of a building, they sustained more damage than those on the lower floors.

Building type — these are the three buildings that we're out of.

Building 18 is a leased building. It's where we housed our television studios and environmental health and safety people and corporate training, corporate management training. It's a tilt-up with some K-braces in it. Basically, that building we call 18 is made up of two buildings, and one is facing Page Mill and one is 90 degrees to Page Mill. The one facing Page Mill has a 1/2-inch crack, wall to wall, in its upper-floor floor. And so, it has no lateral load-carrying capacity left in it and was unsafe. And we are slowly retrieving material out of that building to try to go on with business.

26 we mentioned. That's where our laboratories are. That's a building in a building. And there's the outer building that I'm — maybe it's like 40 or 60 feet — I'm not sure what that dimension is — that outer building is the one that sustained, you know, 90 percent or more of the damage. When one of the braces failed, it started overloading other braces, and they started yielding.

Building 50 is a moment-frame building, and really that didn't have structural damage, but what happened is, it's a little moment-frame — it's a cafeteria built on top of Building 50, and it got shook around a great deal, loosening a large water tank at the top, a 500-gallon one, dumping lots of water. And so, it brought down basically all the ceilings. And because of the moment-frame type of structure, it moved so much that we lost all the glass in that cafeteria. But more importantly, it exposed all the asbestos that was expected to be cleaned up late in our fiscal year '90.

So, that is closed now, with the asbestos clean-up taking place at this time.

Personal computer distribution operation — that's our Building 85 — just a moment here — Building 50 we were talking about is at a Santa Clara site, which is at 280 and Stevens Creek Boulevard. Building 85 is at the intersection of 680, 280, and 101. It's a large warehouse, very important to us in — businesswise, because it is shipping all of our PC products out of there, something on the order of $200 million a month.

So, when we did not hear anything from them, during the first day of our round-robin inspections, we sort of — we felt we had to go down and take a look.

First off, the facility managers didn't know they should be calling us with information, because we're only about 20 implemented in this earthquake preparedness program. So, the communication systems aren't in place. Luckily, the telephones were still working.

We have a lease that's just being signed for Black Mountain, the hardware is here, ready to go up, for repeaters, and we have stand-by power — we just — luckily, the phones were there, because we would have been in big trouble had they not.

Anyway, this building is a tilt-up building. I don't remember the design date on it. The nature of the problem in that, in our pre-evaluation of the building, was that the connections of the glue lams to the pilasters, which are integral to the tilt-up panels, were poor. However, we could not tell that there was ties in the concrete to hold that connection. Basically, you have like a 1-inch rod that's cast in it that goes up and connects with the glue lam. That rod, around that rod, we found it cracking before, and it was cracked even more.

Now, remember that many of our sites, including this one, really never saw a 7.1 earthquake. They didn't get a box knocked off a shelf. And these shelves were 13, 15 feet high. Same way in our Mountain View sites and ever Cupertino, although Cupertino got more horizontal movement than Santa Clara or Mountain View or this location, at 280 and 101.

So, anyway, we got there, I sent one of the engineers — because we had two of them — I dispatched one down there to take a look and come back and rejoin us at our Cupertino site that night, probably about eight o'clock, just let us know what the condition was. And it was too scary to chip away the concrete. She was up at 30 feet up there, and, you know, the vertical load-carrying capacity was — looked like it had diminished quite a lot.

So, this is the process we went through there. We pulled off the inspection.

We forgot to talk about that building, in the hubbub of everything Thursday — or, Wednesday night, so Thursday morning I called them at their homes to find out, "Well, what is the story?" And I ended up having to talk to our very high-level management at corporate offices, and that was at 7:30 that phone call went through, to say, "I've got to close down this PCDO operation, and here's the process. We need to go in and shore it up, make a full-blown inspection of that connection and see if there are ties in there, and make a decision after that what we're going to do."

And they agreed with that, so we took all the employees, sent them home, and began the shoring operation, got a civil engineer down there to help with that.

I want to tell you one thing that really pays off, is having long-term relationships with suppliers and contractors. DEVCON was working on our building next door that we were about to move in, getting out of this building, but it was about a year and a half away, and they came over, and the spirit, the cooperation — he was getting — as the designs were being made for the fixes on this building, he was getting the suppliers on-line, the fabrication shops standing by. They were running two shifts, and they did run two shifts through Friday night and Saturday night, into Sunday, producing what we called saddles, the things that went around the glue-lams. And there's a picture later on that shows that.

But that worked. We had this building brought up well — higher than it had ever been before, in its lateral load-carrying capacity, in four days.

There's a picture of the details, what the problem was. There's two panels, the orange glue-lam coming up. The lower lefthand side shows how that rod comes down in there, and there was cracking around that. There are no ties wrapping that rod. And then, up in the upper lefthand corner, in purple or whatever, it shows the additional anchorage that we installed there.

What didn't go well? We weren't ready, because the earthquake program hadn't gotten in place yet. The upper-level management didn't know what to do about things. We had an EOC defined, but — we had pulled off a drill or two in it, but we hadn't gotten the management involved yet. So, it was hard to — you know, they didn't know what they should be doing, and they hung around. John Young was around for that first night and was out touring the buildings later, the following days.

Corporate hub not fully informed — that is the location at our corporate offices — didn't really know what was going on. It was only by my reports back to them as we went around looking at buildings, which took, again, ten days to size this thing up.

Security guards not trained. It was 5:04, right? Many people had gone. What happens if it was even later? People would have really been gone. That night, of course, was the World Series, and so a lot of people had left early and, you know, there just wasn't a lot of people around the offices at the time.

Most people are renting — are hiring the security staff from outside, Pinkerton or whoever. And it's just difficult to really get some training going on so — and that requires that you have stable employment. And that isn't going on in those services. We have to address that. We've known we have to had to address that for a number of years, and now we're going to.

Access to cash — lucky we had some petty cash boxes around we could get into, but it wasn't big-time money. This was like, you know, maybe a couple hundred dollars, but I think we fared all right. But we do have — and that was part of the plan, to have some cash available.

Drawer releases for the media, that wasn't prepared. It was part of the plan. Some work had been done on it, but not in place enough. So, it was still a kind of a size-it-up kind of situation, and try to deliver it to the media as they were asking, as we learned. Once our communication system gets in place, we'll know, probably within an hour or two, pretty well what the status is, as long as we're getting some cooperation from all our sites. And that's 17 different geographical locations in the Bay Area that we're having to communicate with.

Lessons learned? People-related, complete the program, get it in place.

Establish a uniform HP procedure for operations. That means we're developing an EOC at the corporate offices. Some have done it at their sites, but some have not done it at their sites. We need them all to look the same. We want the same functions present in every emergency operations center, whether it's a financial function, it's a personnel function — we want all of those people there represented so we have people to talk to in those functions, from the corporate level down to the division, or division back up.

Increase the training and scope of EOC drills, and improve response plan for after-hours.

Lessons learned facilities-related. Let's get these sprinkler systems in place and anchored. They — when we went through — over the last five years we've been working pretty heavily, spent almost a million dollars, in our corporate computing center and its supporting services within the building, our Building Number 20, in Palo Alto.

So, we have addressed the reheat boxes and the sprinkler lines in the data center, but all of our other 8.5 million square feet has not been addressed yet, so we need to look at that. That's expensive, tedious work to upgrade that.

Get the ceilings — we know every ceiling that was '70 or earlier, major damage, you know. Let's get up them up — up at least to what current code has, if not something better, if something better is available. There, generally speaking, isn't anything better available. Just get those lateral load-carrying members and their compression struts and the like.

Get the light fixtures all in place, wired to the structure. Those that weren't didn't stay.

Seismic-brace the building systems, that is, fans, electrical systems.

Address the glass breakage. We need to either film them, replace that glass — lots of glass. Glass is only — tempered or the safety type of glass is only required at the pane that is adjacent to an exit. All the others — and we have massive amounts of glass in atriums and so forth — not necessary to have that up, you know, to safety specs. And yet, we have people sitting next to those big panes of glass in offices.

We have an open office environment, so it's really a cubicle, in their little cubicles.

Address — that's right — we need more fundamental ERT equipment: gloves, flashlights, more hard hats. Our Cupertino division cornered the market on the hard hats. They bought 4,000 hard hats the next day, and nobody else could find them, and they were giving them to employees who were showing up and going around. And, you know, in my estimation, I don't think they really needed it, but they had — were very generous there.

Get that emergency operations center in place and going. There's space wars because of the shortage of floor space for our office people, but we're getting that relieved. Yesterday we have it pretty well defined as to the size, and we know where it is, and people are beginning to be moved out of those locations so we can get this EOC in place.

And get the communications system finished. Even just yesterday, there was a daily type of situation — we could have had an electrocution, and — but we — and it would have been better had we had that walkie-talkie in our hand. It could have been handled better. It's just one of those things that you must have, because you can't always tell what's going on in the rest of the building. And phones are not available in these mechanical rooms where fan systems are located.

Is that it?

This is the earthquake program. I have a handout, if you'd like to see it. It goes through all of those, with about a one-paragraph per item.

The business risk assessment, to try to identify the order in which we want to go through our rehabilitation program, that's coupled with a second item, structural and nonstructural analysis, which we have completed. That was the one we've used the ATC 14 methodology on. So, we now have a report of our worst building to best building, and we're trying to measure up where does that impact us in the business world, so we know where to put the money first. And, obviously, you get rid of those glass hazards immediately.

And, again, you know, our buildings, most of our buildings, did not see that earthquake. They saw perhaps a lot of vertical accelerations, but we're talking a tenth of g, .1 g, in the Mountain View area, where we know that, now, up at our Building 26, I understand, it's now either a .35 or .38 g, so it got a lot more shaking up there than did the rest of our buildings. And we have some questionable buildings that are sitting down in that — those margin areas, bay margins, 101 and 237, along that corridor.

Employee information and media control, we started last year pretty well with that, and had Earthquake Fair during Earthquake Month. And at our site, it's just a tremendous — tremendous job to try to get that done at 17 sites, but we need to do that more so people — so our employees are more prepared at home, and then we can get more of their attention at work, and so they can feel better about what's going on at home, we can better deal and have more capability of having people at work to deal with those emergencies we need to deal with.

Media control is another one, make sure we have one message coming up in the company. We're so spread out.

Employee support, that means stocking things at the sites so we can handle some amount of the population.

Local governments partnership, that's — we have in place PREP, Peninsula Earthquake — Peninsula Roundtable for Earthquake Preparedness. There's 15 of the companies in that at this point, and we're getting together and working on various things such as self-assessment. Until that official building inspector can get there, we need to get our plan in place.

We need to get a response taking place and recovery started. We can't wait ten days or something, until they get there. So, we would like to find a way to bring some key facility up to speed, enough to make an observation and classify that building as safe or questionable or unsafe, and then, that would stand that way until we had some better expert opinion on it. But at least, from that, we could begin to make decision. Otherwise, we just stand in the parking lot until somebody shows up.

Well, preparedness plan, the emergency operations center — we've been through all that.

Transportation, we're looking at a four-wheel-drive vehicle per site so we can get to — between sites, and have that perhaps as a truck with the side gates on it, or the side cabinets, where you can store axes and picks and gloves and whatnot.

We also have the airport facility to deal with. We have a new hangar down there, at San Jose Airport, and we're trying to make sure we have a good operating relationship with operations, so that we have some short-landing and -take-off aircraft. We want to be able to evacuate people out or bring people in, key supplies that are needed. From Roseville, for instance, we have — it would be our staging area — get in into the airport, and then we've got to get it from the airport to our sites.

That's about it. If there's any questions — that's a chart which you can't read, it's so small, but that shows our building evaluation process.

CHAIRMAN CLUFF: Bob, perhaps a couple of questions. Can you give us an idea of the financial impact on your company, both, if you can — both the direct costs, and if you can assess what the indirect — like loss of revenue and so forth? Do you have a feel for that?

MR. LANNING: Well, in the direct loss, we're publicly stating it's in the millions, and I can say that I don't think it's going to go two digits. I think it's $9 million or less, okay? I think it's $9 million or less.

You take, for instance, that asbestos clean-up. That's about a million-dollar project right there. Now, that was going to happen anyway; we have to do it now.

But it's something less than $9 million.

CHAIRMAN CLUFF: How about the loss of revenue?

MR. LANNING: Loss of revenue, I don't have a handle on it. The key, I think, was that PCDO location, although our factories that ship the large computers would — they were out of work, I think, one day and — before they could come back. And a lot of that after they came back was clean-up. I just can't tell you that. I don't know it. I don't know if we know it.

CHAIRMAN CLUFF: Well, often, for big corporations like yours, the physical aspects are what you see first. It's when you start counting, if you do have hard-hit facilities and people unable to work, the loss of revenue could really mount up.

MR. LANNING: Yes, it would.

CHAIRMAN CLUFF: And you mentioned your suppliers. Fortunately you had a good working relationship with them, but it really can compound, and that can be several times more than the direct losses.

MR. LANNING: It sure can.

There's another message I'd like to bring to you folks, is that in buildings that are damaged, you know that if we are remodeling a building, there is a certain level at which that remodeling takes place. We have to bring it up, the entire premises up, to some standards, and, for instance, handicapped standards. And like in our leased building, and even if we owned it, we still would stand behind this.

This seems to be the opportunity. When we have a building trashed, we can't go in it. That is the time to bring it up to current, adopted code. And it's — there's no juridicial body saying to do that. And we have employees that basically won't go back into some buildings. And, you know, those buildings have been damaged. We need to show that we've brought it up to better. I mean, does it make any sense to bring a building back to the same level it was, and it broke then?

CHAIRMAN CLUFF: It's an important issue that we've dealt with in other parts of this hearing process.

MR. LANNING: Okay.

CHAIRMAN CLUFF: That is an important issue.

Other questions?

Bill?

COMMISSIONER IWAN: Yes. You mentioned that as you were surveying the damage and so on, you made a correlation with the level of ground shaking, and I don't know exactly where you got those numbers. As I'm sure you appreciate, it's very, very important in making those evaluations to have some quantitative, numerical data to base those upon. I wonder if your company has any kind of a program of strong motion instrumentation. Do you have instruments on the site or on various buildings?

MR. LANNING: No, and I think, Bill, I might have talked to you a couple of years back that I was kind of interested in that, and now we are very interested in that, because we would like to have that — we have no instrumentation. We would like to have that instrumentation in buildings that it makes sense to do that in, because this is not only good for the company to have an idea of what's going on, but also the scientific community. We like to contribute that way, offering those premises to have that information come out it.

The data, where do we get that? That question was — we got that from the CDM&G, two quick reports. And I understand the U.S. Geological Survey has some accelerations available too. I don't have that information.

The one that I was quoting — well, the .1 information from the Mountain View area did come out of CDM&G, but the Palo Alto site, particularly ours on Deer Creek, there was instrumentation in the VA Hospital. And so, that was about a — I don't know if it's a half a mile or something away from our site, and so we were — and that and they were able — our engineers were able to trap a container that got knocked over, trying to figure out the size and so forth — they came up with a 3 to 4 percent g, and when we got the information from the VA, which I think it was 3.5, they — that's how we got that conclusions.

CHAIRMAN CLUFF: Other questions? Dan?

COMMISSIONER EBERLE: Yeah. Bob, I wanted to commend you, and certainly Hewlett Packard, on making a commitment to earthquake preparedness. We see it down in San Diego. We see both personal and an organizational commitment to it.

But what I'd like to know is, what is it that caused Hewlett Packard to make that type of commitment, or a business to take that type of commitment before an earthquake? How do you stimulate business to take those types of steps?

MR. LANNING: Well, yeah. That's — that's a frustrating one. Inside HP, it's quite different than I'm sure it is in other companies and at BAREPP. That's what — we've been trying to work on that issue too.

At HP, the program came about because we're not earthquake-insured. We're business-interrupted-insured, but not for earthquakes. And since I — and this is very personal to me, because I was the one that was a leader of the team that designed the corporate computer center when we built the corporate offices in 1981 and we moved in, and so I sort of took ownership of that physical plant. And when that information came to me, that, you know — I'm the guy who's going to have to put this place back together. Does that make any sense to let it sit the way it is? No, it doesn't.

So, I had management support in working at least at that level, to get, basically over four or five years, about a million dollars' worth of work done. And that's no small task.

For instance, the raised floor system, we had some help from the vendor — nobody is supplying really an earthquake-sound raised floor system for computer centers. And we now have a concepts and guidelines manual out for our use in the company, and we call out the type of system used, and one manufacturer has built these pedestal systems for that substructure. And we did that live. We move computers around while they're running, we jack them up — some of these computers — some of those IBM machines weigh 7,000 pounds, so it took 14 hydraulic jacks to raise them 1 inch so we could drop that floor out and put a new floor underneath.

Okay. So, how did this get to be — to companywide? That only happened about a year and a half ago. My boss, in Corporate Real Estate, started seeing what was going on in the corporate computing center, where actually I was carrying — wearing my hat. And she got enough attention on it and squeezed enough money out to start doing some of these things: "Let's go evaluate the premises." So, we spent $100,000 on a — well, that was 141 buildings — doing a broad-brush evaluation that is not done on the calculation level — it it enough to categorize buildings.

So, due to those efforts, we got enough — we had enough information to go on. And that's where we have the plan today.

The next step is, because we did appear a week before last before our Executive Committee, which all of those executive VP's and the president, chief operating officer of the company — we presented how — this basic presentation you see here, and that "We want to come back within the month and tell you what it's going to take to get this program in place."

And so, we're about to go after them, so they realize, at that level, that what's been happening is unacceptable. We can't do it with this kind of, you know, pulling money out of corners.

And so, what can you do in the other companies? The smaller ones are really going to be difficult, because they're basically trying to stay alive. Every sale means they go another day. In those kind of environments, maybe some kind of a cookbook, simple plan that they can put in place, someone's got to develop that and do some hand-holding with them, because they don't know.

CHAIRMAN CLUFF: Well, thank you very much.

MR. LANNING: Okay. By the way, the Santa Clara County Manufacturing Group is going to have a conference, a one-day seminar on December 1st, from eight in the morning until four, I think it is, at the Santa Clara Convention Center. That's going to be hitting the mail probably today or tomorrow. And they're going to be addressing those things, trying to hit those businesses. It should have 300 to 500 people there.

CHAIRMAN CLUFF: Thank you very much.

MR. LANNING: You're welcome.

CHAIRMAN CLUFF: The next agenda schedule was a structural engineer. Don Peterson will be the person talking to us, rather than the one scheduled.

Welcome to our Commission meeting. And I presume you've been observing the proceeding, so you understand what's expected: a short presentation about your own personal views on how — what worked, what didn't work, and how can we work together to increase seismic safety.

MR. PETERSON: All right. I just was here for Bob Lanning's talk, and it's ironic that we're both one after the other. We've done an awful lot of work for HP, and the buildings that he mentioned, some of them, were our buildings.

I could mention that what went wrong in the earthquake was that we had some buildings in the strongest shaking that we think in this area.

What went well was how our people responded right after the earthquake. We are a 25-person organization, private consulting structural engineers in Palo Alto. We have 12 registered engineers, 6 of them which are structural, and we started right away Wednesday morning taking phone calls, and developed kind of a battle plan and had a communication hub, dropped all the work that we could possibly drop that was ongoing work, and started responding to the emergency calls from people, companies, property management groups.

(The following remarks were accompanied
by a slide presentation.)

MR. PETERSON: And this chart on the screen now is kind of a summary of our response. It doesn't read too well, but the biggest response was in the one- and two-story office, RD, industrial, and warehouse type buildings. And we had 192 buildings that we walked through. The unofficial rating, the green, yellow, and red, we were not posting those things, but that's how we rated them. We were not officially doing that sort of work, and these were strictly order-requested inspections.

And of those 192, eight were considered red. But I — in reviewing them, I don't think they were even red, because they were — some of them were basically mechanical equipment on the roof that was off and in danger of coming — giving more problems.

We go on down — only one single-family residence was really to be considered red.

We walked through a lot of schools — very little damage there.

The only major damage we've really been involved with was the St. Joseph's Seminary, or college, above 280, and Maryknoll Seminary Retirement Home, up above 280. And those were, as I'll show you later, older buildings, but one of them — well, they both had towers that were very prone to the damage from this shaking.

All in all, we had roughly 404, is the way we tally it, inspections.

Our people were working seven days a week there for a while, and some still are. It's really a demand on the structural engineering profession and, you know, all the engineers that can respond to this sort of thing. And we didn't really have a major earthquake, is the way we're looking at it. We had some strong ground-shaking in certain locations, but, boy, if we have a major ground-shaking — I'll show you the map in a minute — down in the flats, where everybody's been predicting we're going to have a lot of ground-shaking, we're going to just be deluged.

And it's good to hear that Bob and his group, and I hope a lot of other companies, are really becoming self-sufficient, because the engineering profession is just going to be so strapped for responding to the calls that are going to have to be made.

That's what really was difficult for us, was responding to the — all the calls. We started making calls to find out places we could refer people to, tried to activate architects' offices that we felt could do peace-of-mind inspections for homeowners. And some of them were very willing, but some were very concerned about the liability issue. And that issue — we don't know where that's going to land, yet.

One thing that we slowly got in line was letters to write, how to write letters back to protect yourself, because you're looking at a building and saying it's okay, but you really don't know if it's 100 percent okay. You don't know if it's 50 percent okay.

I'll show you a little bit of why that's of a concern to us, because of the hidden damages.

This was a kind of an ironic timing, too, on this earthquake, because a lot of the structural engineers belong to this volunteer group that Fred Turner was instrumental in, several years ago, with the Structural Engineers Association. And we had a drill that noon, to make a telephone-tree call to see how the response was, who was still interested, who had received a questionnaire to fill out. I said, "There's not been an earthquake, but we're making this call."

And lo and behold, you know, five hours later, we got clobbered.

But — and then, a couple weeks before that, ATC 20 had a seminar that some of our people were able to go to, that Bob had the little field pamphlet. And their forms and their literature that they put out were very valuable. So, we were really kind of one-foot-going there.

But everybody needs to be prepared, not realize —you talk to some people who say, "We've gone through a 7.1." They haven't. They don't have cracks in their homes, they don't have — things didn't fall. I mean, they — it's just — it's going to be one of those battles you're going to have to do this, to remind people this was not a 7.1 in the main populated areas.

For future planning, I think we're going to really push for all of our staff, and, hopefully, all the profession, to get heavily involved with the training for damage assessment and being able to respond to the emergency.

I'll go on to the screen here. Where we — that's a copy of the USGS damage map. There's — the fault is running across the lower left corner, and the freeways and Foothill Expressway are heavied-up there, and you can see some shading marks down in the bottom central. That's where St. Joseph College is. There's a line right along there, where you just point — there's a line of damage that we've noticed that's rather severe.

Now, the VA Hospital had this 38 percent ground acceleration, and the epicenter area, the maximum ground acceleration down near Corralitos was about 34 percent, I believe.

There were some measurements up in some buildings. As you go — as you go up in a building, you get this amplification, and they were up over 100 percent g forces in buildings in Watsonville. And up near the airport, even, there was some accelerations of 64 percent up in the buildings. So, up — and as we looked around, the further up you went — the second story wasn't bad, the third story was worse, and then on up. And we didn't — we got up into some 10-stories, but really didn't get in to look at the damage that — they'd got things straightened around pretty much. And it's hard to say what's — where the damage started to diminish as you went up in these highrises.

Why don't we go on to the next?

This is addressing some of the things that found Bob as very true, that — the importance of having structural elements ready and visible for post-earthquake — post-earthquake inspections is very crucial, because you can have a bowed diagonal brace that's hidden in a wall. It may be detected by putting a ceiling tile back. In other case, it was detected because a towel bar was — or the paper towel dispenser was not square in a restroom. Those places, when you've had severe shaking and glass breakage, those places really need to be broken open and looked into.

You can go down a little bit.

Concrete shear walls, those cracks — those diagonal cracks there are real. There are some — in that Building 26, there's cracks like that in some 16-inch walls that are just heavily, heavily reinforced. Those need to be able to be inspected. If they're covered up with wood paneling, you don't know what you've got there. Paint, in some other buildings that we've been on — in are very good for telegraphing cracks.

We've ridden up and down in elevator shafts where there's no paint, and they're hard to find the cracks in elevator shafts, but they're nevertheless there.

And all these areas need to be inspected and repaired, when they can get around to it, with injection methods.

On the right is an area — another type of connection that can go undetected, and that's a lot of pre-cast panels on the outsides of buildings were — there may be broken connections or connections that were not installed properly. We found both, where they just — the nuts haven't been put on, the rods hadn't been put on, but the panels are still there, but they're ready for the next shake to give us real problems.

So, it's — there's — a lot of the damage has been found, but a lot of it, we feel, is still undetected —not major calamities, but they're weakened for the next earthquake.

Next.

Of course, this is probably — everybody's aware how houses can be affected, and this is — we've seen this, where the house is great up above, and below the floor, the lack of plywood on the cripple walls allowed the whole house just to go over a little bit. Some are still being lived in, some are being jacked up and — but that's an area that people can really do a lot of good, by just putting plywood on the inside of their crawl spaces, if you're on a slope like that, or even if you're on level.

And there, of course, is the weak lower story, where a lot of apartments are that way, or even houses, with rooms over garages. You get this leaning to one side because there's no shear wall in that vicinity of that wall that went over. The shear walls behind may be gyp board walls or something that were overstressed.

Go on to the next.

The irregularities of structures are being addressed in the codes. And this was a real planned example on about four towers that we have inspected or been aware of and made reports on. One of the classics, St. Joseph's, that toppled over about — just about like that (indicating) and landed, really, upside-down, caused, well, severe damage to the rest of the building, and the rest of the building is going to be demolished because there's — it was a 1925-built, and it was going to take several million dollars to repair or strengthen the building, even before the earthquake.

Why don't you slide up to the next?

This was an interesting thing of how — some reports of how the shaking would shake materials off of storage racks on one side of a room, and the other side, the material would still be on the — on the racks, maybe slid to the wall or bounced around, but it seemed to be the direction coming from the fault, the direction of shaking, seemed to toss things off first.

Is that it?

A little more. Oh, yes.

Roof-mounted equipment. A lot of this happened, and there's better ways of anchoring equipment to still them to keep them from transmitting vibration into the structure. But that was a very common failure, and put some buildings out of commission for a while.

The lower picture there is what Bob Lanning was talking about, is proper bracing of T-bar ceilings with lights in them, and proper bracing of pipes, ducts, sprinklers, so that they don't get this inertia movement moving and bang into each other, set off other sprinkler lines — sprinkler heads, and just cause untold amount of damage.

And having T-bars coming down around your head is — we didn't have it in our building, fortunately, but it can be a real disconcerting experience.

T-bars need to be even heavier than some of them. You've seen some of them. They're still intact, but they've just got a kink in them, straight across. They're just — it's amazing how the — a weak T-bar just failed. They were braced, but the T-bar buckled up.

That's about all I have.

But the codes are addressing some of the things that we've seen happen in this earthquake. Irregularities in verticalness, and irregularities in plan — the Building 26 was an example of irregularities that — it's one very regular building inside, surrounded by a very irregular building, with a lot of holes and narrowness, that did a bit of movement around.

The details for those buckled braces, the requirements in the codes have changed. Just in the last '88 code, they've upped the connection factors, not the base — the design of the building has not been upped from — from the — some buildings are designed for 14 percent g, some designed for 18 percent g, but then you look at what the ground-shakings were giving us, and that's, you know, 38, 40, 50 percent g forces, on these buildings that are designed for 18 percent g.

So, the code is addressing the making of those connections very, very tough. And you have demand ratios to study for columns and connections and stiffeners, and it's — we've got to not worry about upping that 18 percent g force, because if you up that 18 percent g force, we're going to make it even more tough to build buildings. But we've got to make the details reasonable, and very, very tough.

VICE-CHAIR RIORDAN: Let me say, while our Chairman had to step out to make a phone call, we certainly want to thank you very much for a very interesting presentation. There may be some questions from some of the commissioners, and let me open it up for questions now, one or two. We do find ourselves a little bit still behind time.

Is there a question?

Commissioner Iwan?

COMMISSIONER IWAN: I had just a specific question. You talked about equipment that was mounted on isolators, and you talked about snubbers. Did you find that equipment that had snubbers didn't behave well, because the snubbers were broke, or are you saying that it needed to have had snubbers?

MR. PETERSON: Well, we saw some bolts literally sheared off. HP 26 had some that literally sheared the bolts right off. And I — they must have had snubbers on. I did not see that personally, but the forces that are generated, that's where the design forces are going to probably go up, or on parts of buildings — and the stability, because of the vertical acceleration and then the high horizontal acceleration, particularly up in the building and on the roof of a building, where you get this 1.0 g or better.

COMMISSIONER IWAN: Thank you.

CHAIRMAN CLUFF: Go ahead, Paul.

COMMISSIONER FRATESSA: You expected 400 —

MR. PETERSON: I have to look around this far to see who I'm talking to.

COMMISSIONER FRATESSA: Well, don't hurt your neck.

MR. PETERSON: Yeah, right.

COMMISSIONER FRATESSA: You inspected or did damage assessment on 404 buildings. Did you post any of those buildings?

MR. PETERSON: No.

COMMISSIONER FRATESSA: Okay. A follow-up question, then. And we have heard some questions about liability and confusion over the posting of buildings, the red, green, and yellow tags. Could you give the Commission your view for a moment on, in those inspections, what type of liability do you have, especially in comparison to an OES inspector, who is covered by an emergency mandate?

MR. PETERSON: Well, this is unknown, really, what kind of liability you're picking up if you yellow- or red-tag a building. But we are not really legally liable — legally able to tag a building in that manner. It has to —you have to have a building official with you to do that sort of thing. All we can do is notify the owner that the building is — should have limited entry or should not be entered at all.

And I think the OES' deputizing of the inspectors is the only way to go, and that's what's going to have to happen if we had a major — you know, if there was major, major damage throughout this whole heavily-populated area.

CHAIRMAN CLUFF: Any further questions?

VICE-CHAIR RIORDAN: Just a comment on the light side.

I wonder what your colleagues think that received one of your calls on Tuesday that said, "This is not an earthquake, but in preparation for the next one." And here you are, at five o'clock, faced with a real earthquake. I mean, they must think that you had some premonition.

MR. PETERSON: Well, we — kidding the fellow that called this thing was — you know, he just kind of smiles. I mean, he was — his wife was a week from delivering a baby as well, so it was kind of ironic, just very, very freaky.

CHAIRMAN CLUFF: Thank you very much.

MR. PETERSON: You're welcome.

CHAIRMAN CLUFF: The next part of the agenda is Todd Argow.

Todd is a — come up to the speaker's box — person that's been very interested in earthquake safety issues, and has a background of experience that we're interested in.

And we'd like to hear what worked, what didn't work, and how we can work together for better seismic safety.

MR. ARGOW: Thank you very much, Chairman and members of the Commission.

Saratoga, for background information, is a city of about 30,000 people. We're somewhat unique to some of the other cities you might have talked to, in the sense that we're a contract city. We don't have our own police department, we don't have our own fire department. Saratoga is served by two fire districts. One is the Central Fire Protection District, which covers a major portion of Santa Clara County and half of Saratoga. The other one is the Saratoga Fire Protection District, which was originally a volunteer fire department that has evolved over a period of time, and has professional staff on board, and serves the other half of Saratoga, and Saratoga only.

The City contracts with the Santa Clara County Sheriff's Office for its police services. This is significant, especially with regards to a regional emergency such as an earthquake, because the City does not have direct control over its resources when a regional emergency happens.

Now, when there is a local hazardous chemical spill, or a local fire, we can draw on the region and concentrate our resources in the city to handle that kind of an emergency. But when there is a massive, regional emergency, in which resources throughout that region are being stretched, the City of Saratoga is especially vulnerable because of the fact that it contracts for these services.

So, by way of background, I wanted to point that out.

Up until 1983, Saratoga really didn't have any emergency plan to speak of. The plan in place at the time — and this is surprising for a city of about 30,000 people — was basically, "We'll do our best to do our darndest to handle whatever comes up."

In 1983, a team of volunteers were appointed to work on developing a new emergency plan, and that plan was approved by the city council on January 1st, 1986.

Since that time, quite a bit has happened. While the plan developed by the volunteers was a very meaningful document, it wasn't that useful in an emergency situation because there was a lot of text to it. And in an emergency, we have found that people aren't always thinking the most rationally as they otherwise might be, and don't have time to read a lot of procedures and text to handle an emergency.

I was very — I've been very active in the Emergency Managers Association for Santa Clara County, and I was very impressed with the Palo Alto — the City of Palo Alto plan, which is now a format that is being copied throughout the state, certainly in this county, and even at the state level itself. It's based on the incident command system.

So impressed was I with that plan that I decided I wanted to develop an entirely new approach to emergency planning in Saratoga, and in early 1988, I implemented that planning effort. We actually hired the person as a consultant that created the Palo Alto plan, who is now the assistant director for emergency services for the County of Santa Clara — you heard from him this morning — Geoff Paulsen. And he helped, worked with me in developing an emergency plan that was based on the incident command system that had the checklist.

Another deficiency in Saratoga that hindered our ability to respond to major disasters is that we really hadn't had a lot in the way of exercises or training. Because the staff in Saratoga is very small, everyone is very busy, and emergency planning is not the priority that I feel it should be, or has been in the past. We just initiated a comprehensive training program this year, in 1989, and we've had two major exercises, one of which the —was the regionwide exercise on July 13th of this year.

We developed our incident command emergency plan and tried it in place for the first time during this earthquake. Although it's still a draft plan, it was the plan that we reacted to and utilized when the earthquake occurred.

We found that the plan based on the incident command system was extremely helpful, because we had a major deficiency in personnel to man the EOC. Our city manager was out of town, so I had to assume command of our emergency operations center, and there were very few people there to fill the many roles that are required in an emergency operations center. Consequently, we had a lot of people filling roles that they were unfamiliar with and hadn't been trained in.

Because our emergency plan contained the checklist, because it was based on the incident command system, the individuals filling those unfamiliar roles were able to function effectively, relatively effectively, given the circumstances, because of the checklist, because it did your thinking for you. At least it got you oriented into what kinds of things you need to ask, what kinds of things you need to check, what priority of things you need to handle, given that particular function that an individual may be handling. And we found this to be very effective in helping us manage a major emergency with very, very few resources.

Saratoga — Saratoga City Hall was lucky, because our phone service came back up within five minutes after the quake. But much of the city certainly did not have phone service, and, in some cases, for days.

In terms of power, the power at City Hall came back up within ten minutes. We had a generator, which we brought down and plugged in. In bringing the generator down, we found all those little problems that become major obstacles in a big emergency. We have this generator, it's designed specifically to power our emergency operations center in an emergency — we found that — we discovered that no one could locate a strategic cable to connect the generator to the port in the wall to the EOC at the time we needed it. And valuable time was lost, which would have been serious, had we not had power back.

I was bringing the generator in as a preventative measure, because I was concerned that an aftershock might take out our power permanently, or at least for some period of time, and I wanted to have generator power available if it would be needed.

It took us a couple hours before we were able to locate a key cord — such a small, little detail that creates such a major obstacle in an emergency, to be able to plug that generator into the port, into the wall, so we would have that generator power if we needed it.

Our sheriff station was not so lucky. They were without power for a good part of the evening. They did not have a generator, and they were running out of candles.

Fortunately, the fire district, the Saratoga Fire District, had a generator, loaned it to them, and was able to bring them back up on power within an hour after the event occurred. So, this was another problem, and a key area for emergency management was without power. And, of course, they're doing something about that now, and they're putting a generator in there. And that problem will not happen again.

We had numerous calls for gas investigations. Communications was a serious problem. We had only one surviving channel for our emergency communications in Saratoga, which was, I think, the case in much of Santa Clara County, certainly in the west side. For some reason, many of the other channels went down, and in a time when we needed more channels, we actually found ourselves with less.

This created traffic jams on the channel for — the one channel that was open had to carry a tremendous load of radio traffic in the immediate response after the emergency, and so this was a serious problem.

We had intended to rely heavily on our ham radio operators, and certainly the ham radio frequencies were working. Even though the repeaters were down, we could certainly get information back and forth across town, and even reach out to other points throughout the county via our ham radios. However, one of the key areas that we had depended on the ham operators for in Saratoga was to give us status reports. Because we are a low-service city, we don't have a lot of police officers out there, and obviously, many of them were drawing — were being drawn off to other areas where the needs were more serious. We were relying on our ham radio operators to tell us what's going around in their neighborhoods. And there's a smattering of them throughout town, and they're part of a network that is trained in doing just exactly this kind of service.

Well, unfortunately, as it turned out in reality, many of the ham radio operators were tending to their families and not on the frequencies. Therefore, when we tried to reach them and say, "Tell us about your neighborhood. Is there any gas? Are there any fires? Are there any injuries? Is there anything in your neighborhood? Be our eyes and ears for us and tell us if there's anything that we should be aware of" — we found that we were unable to reach many of them because of this.

So, I would say that more training in this area would certainly be warranted.

We had one major hazardous chemical spill at West Valley College, which is located in the heart of Saratoga, and that was effectively handled.

We were surprised that — we have many older bridges in town, we have many creeks, being located right up against the Santa Cruz Mountains and right next to Los Gatos, not too far from the epicenter — many of those bridges were built around the turn of the century and in the 1930's and '40's, and we were very certain that we had some problems there.

We almost assumed that our bridges were out, because of their age and the type of construction. And very surprised were we that we did not lose a single bridge. All bridges remained functional, and none of the bridges have any evidence of serious cracks or damage, and they have all been inspected.

This was something that we did as a priority right away, because we feared that a bridge might appear to be intact and then would come down with an aftershock. One of the early things we did with our building inspection staff, within hours after the earthquake, was inspect all the bridges to see how they were doing. And we were so surprised that they were doing very, very well.

We had one major landslide on Pierce Road. We were able to handle that, numerous road-cracking throughout the town. We've had quite a bit of water main — water mains breaking, which caused obvious problems, a lot of road-cracking.

The seriousness with the road-cracking is that, with the storm coming up that weekend, if water starts getting in between those cracks and undermining the pavement, you have some long-range problems, not only of a financial nature, but also of a traffic flow nature, that could occur if the roads start undermining and potholes of a substantial nature start being caused by the many cracks and the water getting underneath the pavement.

We were able to seal most of the cracks in the roads with a temporary sealant, so we didn't have that problem when the storm came.

One — one factor that really stood out in my mind is, as I was handling the emergency for the few days following the quake, is that a lot of the media attention throughout the area was focused on San Francisco, and a lot of people in Saratoga were very concerned about what was going on, and "Is the water safe?," and "Is the gas safe?," and "What should I do?," and they were looking for some reassurance from their local government. And, of course, they turned to the media to hear what's going on.

Much of the media attention was clearly focused on San Francisco, and there was very little information about what was going on in our area. The fortunate thing is that we have a community access channel over our cable TV system. And as power was brought back on-line, I was able to get emergency messages out to our citizens via the cable channel, concerning water, concerning gas, concerning a whole host, dozens and dozens and dozens of different areas that were of major concern to our constituents.

And people really keyed in on that channel. That channel proved to be an extremely vital link to us, in getting the local information out to our local people. They weren't too concerned about what was happening in San Francisco. They wanted to know what was happening in Saratoga and what was happening in the West Valley, at least what was happening in Santa Clara County. And that information was not there from the press.

Our local access channel did get the information out. Once the word got out that the information was there, people who did not have cable TV service went to the neighbors who knew that they did. There was a lot of networking within the community that went on, and I've received hundreds and hundreds of phone calls from citizens that said, "That information on Channel 6 was just what we needed. We knew whether or not it was safe to drink the water. We knew what to do. And more importantly, we felt that people were in charge of the emergency and we were not at risk."

And so, that reassurance was very helpful, not only from a logistical sense, not only from a health and safety sense, but also from an emotional sense, in letting the citizens know out there that we were on top of the emergency and we were handling it.

Another thing that helped us quite a book is a booklet that we put out in Saratoga. I first — I published my first edition in 1985, and I'm currently doing the fourth — working on the fifth edition, and it's called "Living with our Faults," and it's an earthquake — earthquake preparedness guide which we make available to our citizens at no charge. Hundreds — in fact, thousands of people have picked up copies of that book over the few years we've been printing it, and have indicated to me that it really made the difference in their survivability of the earthquake.

And so, I think that kind of information is very helpful, a specialized book focused on earthquakes in particular, because, I think, in terms of Saratoga, that's the area where we're at greatest risk, is from a regional-wide emergency, because of some of the characteristics in our community.

In summary, I would say that our ability to — we handled the emergency effectively, but we were stretched to the limit. We were right at the limit, in terms of our capability to handle this emergency. We did not have one spare officer, not one spare piece of fire apparatus. Everything was devoted. We had fires spontaneously break out, we had gas lines breaking, we had injuries from people that were under chimneys when they fell on top of them. And we spread out units thin, and we were able to handle everything we had without one person to spare.

Had the earthquake been a little bit stronger, or had the emergency been more severe, I think it would have exceeded our capacity to handle and respond to that emergency.

So, I think this is a lesson to us. We found lots of little problems that happened.

The backup gas system for gasoline delivery at our corporation yard, that was supposed to be designed to work on an automatic generator pump built into the system, did not work. We had to find an electrician to get the system operational. Our police and fire engines were running out of gasoline. But we were able to find an electrician to fix the system, and within an hour and a half, we had gasoline pumping and were able to fill those vehicles and to keep them operating.

So, we had a few close calls there, and I think this is evidence of the fact of the importance of more practicing and more needs.

I think there's a real lesson here. I think, very often when you've got leaking pipes in the basement, it's hard to spend time thinking about roof maintenance. And I think that's what emergency planning is really all about. We're so busy and caught up with the day-to-day things — if it isn't broke, don't fix it. We've got enough things that are broke. We've got so many major planning issues, so many solid waste issues, so many other issues that we're dealing with that are serious problems right here and now. We don't, in the public sector, devote enough of our resources to emergency planning, as I think we should.

And I think the many problems that came up as a result of this earthquake — and thank goodness it wasn't more severe than it was — was a real lesson and testimony to that fact.

Saratoga, as it turns out, was very fortunate. Our total damage estimate for the community, excluding contents, was about $7.3 million, which pales in comparison to the — our neighbor immediately to the south, of Los Gatos, with a quarter of a billion dollars damage. So, we were very, very fortunate in that regard. Had the earthquake seismic waves come from a different direction, I think we would have been in much more serious trouble.

I think we've learned a lot from this, but my main concern is that we take advantage of the momentum and the attention that's been drawn to the earthquake right now and utilize those resources to more effectively devote time and energy to emergency planning, and especially exercises and training. I really feel we don't do enough of those at all.

One sidelight, too, is that I'm president of the American Society for Public Administration in Santa Clara Valley, and in September we had a speaker, Dr. Karen McNalley, from the Charles Richter Seismological Lab, with the University of California at Santa Cruz. And she was our September program. And in September, she said that there was an elevated chance — in fact, in her opinion, a likelihood — that the Loma Prieta earthquake, or the Loma Prieta part of the San Andreas Fault, would have a major earthquake in the near future, and she predicted that that earthquake would be a 7.1, in September. Right on the money.

And when I went back to check the — we published her report in our newsletter, which came out in the end of September — and I couldn't believe — I recollected that she said 7-something, and I went back to check the published summary of her presentation, and there it was: Loma Prieta portion, San Andreas Fault, 7.1

earthquake — her prediction, because of the foreshocks and her study of that fault.

So, I would really recommend that if this Commission has not done so already, you might want to consider talking to her, because her track record and credibility, as is documented now, is very high. We were very impressed that she hit it on target like that.

Thank you very much. I'm available to answer questions.

CHAIRMAN CLUFF: Thank you. With regard to your last comment, Dr. McNalley was one of the speakers at our hearing yesterday in Santa Cruz. She stated in her testimony that it was not possible to predict earthquakes. I just wanted to —

MR. ARGOW: She — yeah. That's what they always — they always put that disclaimer out there, and they say, "We can't tell you the hour or the day." But then she said, because of the foreshocks, because of the June, '88, and the August of '89 foreshocks and her study of that fault, she said she was really concerned about that portion of the fault and felt there was an elevated likelihood, to use her terms, of a major event that would probably be a 7.1 in that portion. That's — that's exactly what she told our group.

CHAIRMAN CLUFF: Fine. There has been a U.S. Geological Survey group called the Working Group on Earthquake Probabilities that had identified that Loma Prieta segment as a high likelihood segment to go off, with about a magnitude 7 earthquake. So, she was generally following those and her monitoring of those aftershocks indicated the importance of that segment.

And, of course, what gives us pause for serious concern is that that same working group identified several other segments of faults, the peninsula segment of the San Andreas with a —

MR. ARGOW: And the Hayward.

CHAIRMAN CLUFF: — high likelihood, and the Hayward —

MR. ARGOW: Right.

CHAIRMAN CLUFF: — two segments on the Hayward.

And, of course, we know either one of those would produce much more catastrophic losses. And we're lucky in this earthquake occurring. This was a very powerful reminder that we have more serious things coming, and we need to redouble our efforts to improve seismic safety.

MR. ARGOW: If there is to be a positive finding made out of the earthquake we just had on October 17th, it may have catapulted us into a state of awareness that these are realities in California. And when the larger events do occur, we may be in a better posture and a better stance, able to handle it, as opposed to getting hit with an 8 right off the bat, without the precursor of a 7.1. So, there may be a real positive silver lining to this cloud.

CHAIRMAN CLUFF: That's the way we ought to be looking at it. And we thank you for your good efforts and leadership, and we want that to continue.

Other questions from commissioners? Dan?

COMMISSIONER EBERLE: Todd, is that your function, emergency management, at the city?

MR. ARGOW: Yeah. My functions are many-fold in Saratoga. I'm in charge of solid waste, the police contract, emergency preparedness, code enforcement, cable television — and the list goes on and on and on, so I have many, many hats. I have a tiny fraction of my time that is devoted to emergency preparedness.

I have been recommending consistently to our manager and council that we expand our resources and emergency preparedness planning, and not just leave it to a group of volunteers. And a few months ago, the council allocated 40 percent of a single position to concentrate solely on emergency preparedness planning, and that person is now in place and working. And that will improve our ability substantially.

COMMISSIONER EBERLE: You need to get it up to 100 percent.

MR. ARGOW: I would — I would like to. I would seriously like to, but I — I'm kind of the person that looks at the glass and says, "Is is half full or half empty?," and I'm grateful for it being half full; it's better than an empty glass.

So, I think we'll come a long way. I don't think we'll do enough, but I think we'll come a long way from what we were able to do in the past.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Thank you very much, Todd.

MR. ARGOW: Thank you.

CHAIRMAN CLUFF: The next speaker on the agenda is Fouad Bendimerad, manager of risk programs for Stanford University.

Fouad, welcome to our Seismic Safety Commission hearing. We understand that Stanford did receive substantial damage to some of its facilities. We'd like to hear from you what worked, what didn't work, and how we can all work together to improve seismic safety.

MR. BENDIMERAD: Thank you very much. Thank you for giving me the opportunity to come and talk to the Commission.

First, what I have to point out is Stanford is a unique owner. It has about 400 structures that were built over a period of 100 years. These structures have diverse functions — they're labs, classrooms, a hospital — so, it's a very unique situation.

The other thing is, Stanford probably has some resources in the sense that its faculty has some expertise. And most of the decision-making people and most of the faculty live within Stanford boundaries, so it's not a difficult task to get a hold of those people after a quake.

The — what I'm going to talk about first is what was set in place before the quake, how was Stanford prepared before the quake, and then talk about how we reacted to the quake.

Stanford had an emergency plan that was activated a few minutes after the earthquake. There was an earthquake command center that was established at the public safety offices right a few minutes after the earthquake. And from that point, all the operations were run under emergency rules.

Under those rules, there are two committees. One is a decision-making committee, which is comprised of the president, the provost, all the VP's and the deans, and the other committee is the operational committee, which consists of 12 people, representing operations, facilities, public safety, housing, and personal safety.

After the quake, 8 of the 12 people were on campus, and they went directly to the earthquake command — emergency command center, as the plan called for. And in addition to this, there are several local action committees. For example, the Housing Office has, for each dormitory, a person, a student, that is a resident of that dormitory that is responsible and trained to do some kind of emergency response for that specific place. Also, the facilities people in all major lab buildings, for example, they have one person which is responsible for local action and reporting to the emergency center.

So, all those people reacted very quickly and as trained, which was, again — the thing that seemed to make the difference is the fact that they knew what to do before the quake, and they reacted to that plan — to the plan.

So, it's really the main reason why the plan worked well, is because people were trained before the earthquake and knew what to do at their own level.

The other thing is, I think, the fact that the earthquake struck at 5:04 and not at 6:30, you know, is an important factor because most of the decision-making people were in place, and most of the facilities, the operations and maintenance people were there, and therefore, tasks could be assigned very quickly. And the organization also could be put in place rather quickly.

The other factor is that the university did not lose power. Power went — did not go out, so the — all the electrical utilities — I mean all the utilities were working and kept working. All the lab installations did not suffer from the fact that they lost power, so we did not have any situation where there was any reaction from the fact that, you know, the power was lost. And considering all the labs that we have, that was — that is an important factor.

Just after — yeah, the earthquake preparedness plan has been in effect for many years. It has really been strengthened in the last three years. The awareness among the decision-makers and among the people in terms of earthquake preparedness has raised considerably during the last three years.

There is a committee called the Earthquake Action Committee, which has been — which meets regularly, like every month, and decides on which actions and which procedures should be set in place for earthquake emergencies. And that committee has a full-time staff that translates those decisions into procedures for — actually, operations procedures.

So, we did have a procedure before the quake for earthquake emergency. How did it work? It went really very well.

One of — the reason why it went well and everything went well is because the earthquake occurred at 5:04, and most of the people that needed to be there were there. So, the organization went — went ahead very quickly.

At about two hours after the quake, we had a good assessment that no catastrophic thing has happened on campus, that there was damage around, but there was nothing absolutely catastrophic that had happened.

The thing that — the thing that went well is — first, the structures went well. The plan that was prepared before, and all the structures that were prepared before, was set in place immediately after the earthquake and worked as — as it was supposed to. The plan did — the structure of the plan did work, you know, as planned.

The other things that have — and I'll talk about this a little later, about structure — but the other thing that has paid off is the fact that Stanford has had a program to educate its staff, its faculty, and the students about looking at their own environment and reducing the hazards around themselves, like, you know, we have had a program to bolt bookshelves and things of that nature in all offices. So, that has, in my opinion, made a difference in terms of people that get injured during the quake.

The other thing is that we had programs also for lab safety. We had a consultant going around, almost on a — you know, on a continuous basis, to upgrade the safety, earthquake and other lab safety issues, in labs. We recently finished studies on the main buildings, like the medical school and all medical school and hospital labs were rechecked, and new procedures were issued before the quake on earthquake safety. We also had studies done on our main labs that have hazardous materials that could cause catastrophic damage. All those things — a lot of those things were done.

For example, even structures like the museum, which was structurally badly damaged, but only — lost only three items of art, of more than 3,000 exposed items, because the museum went through a systematic program of protecting all the exposed items that they had.

What are the things that did not go well? Communication problems. It's very difficult to channel communications and determine what is important and what is not important in what is reported. For example, people — in the minds of a lot of people, if a sprinkler went off somewhere, that's — that's a major problem, whereas — you know, and they keep repeating that same thing, that somebody should come and take care of the sprinkler. So, there was a lot of confusion in terms of the information that was received and how to analyze that information and establish priorities.

Also, the information was changing very, very rapidly. So, by the time you start assessing something, we have new information, and you don't know what to do with it, and it confuses the issue. So, the — in that sense, the training of people and the training of the decision-makers also was not to the point where they could understand how to make a difference between something that is major and something that is minor, how it is that if somebody — if there's cracks in a building, how they would interpret that as being, you know, a major problem that they should take care of immediately, or if it's just a minor problem.

And the same thing for equipment failure, and the same thing for, you know, people being outside and complaining about fire alarms, for example, ringing in their building, who was going to take care of this. And there was a lot of confusion in terms of how to treat information and how to prioritize actions, and also related to the lack of knowledge.

The first and biggest task was to go and inspect buildings. And as I said, there are 400 buildings, and there are not enough structural engineers around on the campus to go and look at all this. So, what the university did is — the first thing that they did is they posted all the buildings as being close, that people should get out from the buildings and not go inside the buildings, unless and until there is a sign on the building saying that the building is safe. So, during that same night after the earthquake, they were signs that were prepared and posted on the buildings saying stay away from the building.

And then they established the name of the official inspector — some of you — you know Professor Hareshah, from the Department of Civil Engineering — was named official inspector. And he organized a first inspection team, made of the faculty of the Department of Civil Engineering and some of the graduate students that had knowledge of structural engineering, who went and looked at the major and essential buildings, like all the residences, to make sure that — you know, should they put students back during the night, or should they leave them outside? And what are the alternatives for students to spend the night in?

They also checked all the essential buildings, lab buildings, buildings that may have hazardous materials that can spill and create fire or some problems of that nature.

And they, basically, just gathered whatever potential, human potential, they had around to do that. And those things occurred around the whole night.

So, by the next morning, most of the student residences were checked and a decision was made if a building was safe or was — all the students should stay outside until a more thorough inspection was established on the building.

The emergency center kept sending information to the broadcasters on the university student radio system so the students could — they were getting information on, you know, buildings that were closed, and also what was going on at the university. And that kept a lot of people calm, because they knew what was going on, and also knew what was going on away from Stanford, what was the intensity and the magnitude of the effect of that earthquake, because a lot of them were worried about their parents and their friends and what went on and how they would get from one place to another place. So, that was very helpful.

The morning after the quake, there were four committees that were established, the building inspection group, an analysis and priority group, an emergency repair group, and a clean-up group.

The — I was heading the building inspection group. We had about 20 inspection teams; each team has two or three members: a facility member — that means an architect or a construction administrator; a structural engineering — a structural engineer or a graduate engineering student, depending on how much — you know, the size of the facility; and a hazard safety specialist for lab buildings.

This inspection team basically followed the ATC 20 procedures and posted a building as being either — being yellow or red. The team responded and sent information directly to the command center. And typically, what I would would have — receive these inspection sheets and make a decision on either closing or opening the building, or send a more qualified person to check, if the decision could not be made.

By the end of the day on Wednesday, around 5:00 p.m., we had 80 percent of the buildings inspected and a decision made on — a decision was made to reopen the university the next day.

What helped us a lot is technology. We had a data base on all our buildings, and we could access it very quickly. We could update the information and had printouts very quickly. We could send those printouts to the people responsible for scheduling classrooms, and they could make the changes very quickly, so the next morning they know — the students know where to go. Signs were posted, and we could keep updating the information in the computer as we were receiving it.

Let me go back again and talk about what happened to the buildings. As you may know, Stanford has a hazard reduction program since the mid-'50's. Stanford was badly hit by the 1906 quake. They had a — probably a higher exposure than other owners, a lot of unreinforced masonry buildings, and several of those buildings have been updated as the program was put in effect. And it took a lot of steam in the last three years, in which we have done quite a few upgrades, quite a few buildings.

The performance of these buildings was very satisfactory. We did not have — basically, all the buildings that were updated and upgraded for seismic did not suffer any damage, compared to, for example, the non — the original unreinforced masonry buildings which did not have any strengthening, which must have sustained some form of structural damage. The ones that were upgraded did not sustain any damage. Even in terms of nonstructural damage, there was very, very little nonstructural damage in them, and they performed very satisfactorily.

The — we had some major damage in some of the buildings, mainly two main unreinforced masonry buildings that were on our list as the next buildings to do for the seismic hazard reduction program of the university. Those two buildings are out of commission, and we have two main programs that basically are out.

We had damage to more recent structures, some shear-wall buildings that sustained damage, the — a lot of damage to the wood-frame buildings. Largely, this is used for, you know, housing 40 to 50 students, sometimes, with an open space on the first floor, and react as soft stories, and you get a lot of damage to the upper floors and the first floor. That put about 450 students out that needed to be relocated.

We're still going and assessing damage. We have hired structural engineers to go back and try to learn more about how our buildings perform and how they would perform in a larger quake, and what actions should be taken in terms of revisiting our seismic risk program and allocating resources for strengthening these buildings.

I think I will just stop here.

CHAIRMAN CLUFF: Thank you, Fouad. I have a couple of questions that I'd like to start out with. But before I ask them, I want to commend you and Stanford for having such a comprehensive program. That sounds like it paid off, and we've heard this over and over again. Those who had a good program and had implemented it did find some things that could be improved, but nevertheless, it was very effective and good to minimize the damage.

Let me ask you, from the standpoint of your position as a manager of risk, which must include the earthquake one, about your decision process. And how do you judge safety?

Now, let me ask you a couple of questions related to that. You mentioned that you have — before the earthquake, you had identified some unreinforced masonry buildings —

MR. BENDIMERAD: That's right.

CHAIRMAN CLUFF: — and could you describe the decision process in how do you evaluate them, how do you classify them in terms of life safety, and if there were some that were maybe categorized as not very good or poor, did you allow those to be open for students or for those to be occupied?

MR. BENDIMERAD: Well, before, you know, the quake, we had been working on this program for establishing our priorities for which buildings should be strengthened. We had about 50 potentially hazardous buildings. Among those, about 35 were unreinforced masonry buildings.

We closed three buildings, three major buildings, on seismic safety reasons, because we considered that the risk there was not acceptable.

CHAIRMAN CLUFF: When did you — when did you close those?

MR. BENDIMERAD: About in the last two years.

CHAIRMAN CLUFF: Two years.

MR. BENDIMERAD: Yes.

CHAIRMAN CLUFF: So, you made a judgment that the risk was unacceptable.

MR. BENDIMERAD: That's right. And we closed those buildings.

The fact that we went through and looked at a lot of buildings and knew, you know, which buildings would cause us trouble helped us a lot in terms of sending teams that are qualified to look at those buildings. We had only a limited amount or number of structural engineers on hand. And we were fortunate enough to have good, you know, work relationships with a lot of structural engineers that reported and came and offered their help.

We also were fortunate to have faculty and students that are knowledgeable in structural engineering.

But the fact that we knew what buildings were our biggest — or might be our biggest problems — helped in affecting — in affecting those teams, and so, you know, those persons are more qualified.

We also had a couple of very good structural engineers that we did not send anywhere, but left them there in case we had — a decision could not be made, or the assessment was not complete, and we didn't know if we should open the building or not. We sent for a second opinion. Very, very seldom, we made our decisions on one single person's opinion. We always had at least two people look and come back to — if they come back to the same, and say, "Well, the building is, you know, safe and can be occupied," you know, we decided to open the building again.

We went by the same criteria in saying that, you know, we reoccupy buildings that are at least — I say "at least," but — they will be in the same conditions as before the quake, that were not weakened. And when I'm talking about this, I'm talking mostly about our unreinforced masonry buildings that were occupied before the quake. So, if we had any doubt that a building has been weakened, we closed it. If there was any sign of structural damage, we closed it. And that's why we have so many unreinforced masonry buildings now that are closed, even though they have sustained a very limited amount of damage.

And the other reason why we closed so many is, before the earthquake, we had a — we went out and looked at all our residences and reinforced quite a few of them. One of them, Fred Turner did the design on, and it did very, very well during the quake.

So, the decision was basically two — at least two opinions that we could reopen the building and the building is safe.

CHAIRMAN CLUFF: Well, let me just continue a little bit about the judgments you made about how you judged safety. How do you do that?

MR. BENDIMERAD: Well, granted, the criterion is
— I mean —

CHAIRMAN CLUFF: I mean before the earthquake.

MR. BENDIMERAD: Yeah. Oh, before the earthquake.

CHAIRMAN CLUFF: Yes, before the earthquake, not after.

MR. BENDIMERAD: Okay.

CHAIRMAN CLUFF: I mean, you just mentioned that you had a number of buildings that were potentially unsafe, and you decided to close those. So, that was a safety decision. How did you go through that?

MR. BENDIMERAD: Well, when you say "potentially unsafe," I said "potentially hazardous."

The decision was made on several parameters. The first parameter is, what is the strength or the vulnerability of that building? And we rated all our buildings based on a structural assessment from structural engineers.

CHAIRMAN CLUFF: And how did you rate them? Qualitatively?

MR. BENDIMERAD: Just qualitatively, about what we knew about —

CHAIRMAN CLUFF: Like "good," "fair," "poor," "acceptable"?

MR. BENDIMERAD: Like — mostly — usually from a scale from 1 to 10.

CHAIRMAN CLUFF: Okay. So —

MR. BENDIMERAD: And —

CHAIRMAN CLUFF: So, the ones that were on the poor side were where on the scale?

MR. BENDIMERAD: Well, the ones that were on the poor side could be as low as 3 or 4.

CHAIRMAN CLUFF: 3 or 4.

MR. BENDIMERAD: Yeah.

CHAIRMAN CLUFF: Okay.

MR. BENDIMERAD: Then we add to that, you know, what was the average time-weighted occupancy of that building, okay — how many occupants, you know, that building could have on a — and how much time those occupants are spending there. And we added what is importance of that building in terms of the operations of the university, so that we had our parameters there, but at a lower coefficient. The main two — the two main parameters were time-weighted occupancy and vulnerability.

And we basically combine those and have a rating, and sit down and make a decision and say, "Well, compared to these buildings that we have closed, how does this — and where do we fit them in our priorities?"

The problem, as, I think, you know, in every other case, is that you have to go on and continue your operations. We are in the business of educating people, and we have programs in every single building. And there is not a single space. If you put people out from a building, we have to have another building built before we take them out. And I have to have the resources to build that building.

And so, it's a planning process. You know your risk, and you plan. And the more you know about your risk, the better you plan.

And the ones that we — in the mind of us and a lot of people were judged, you know, too risky, we closed them. But we still were occupying a lot of unreinforced masonry buildings. But, you know, we knew that we had to do them, and in which order we had to do them. There was — you know, the whole risk-planning.

CHAIRMAN CLUFF: Other questions from commissioners?

Commissioner Waste?

COMMISSIONER WASTE: Mr. Bendimerad, you referred to the use of the student broadcasting station as a means of getting information out. And this, in effect, is a form of local radio. We've heard a lot of testimony as to the effectiveness of this or many other systems which — most of which were not functioning at the time.

We had a question raised yesterday, though, in regards to this type of media, as to where they were getting their information from. And I'd like you to comment on that as it applies to Stanford.

MR. BENDIMERAD: The information was coming directly from us, with the emergency center. The director of public safety, who was in charge of that center, was the one that cleared the information before it went to the radio. So, that was the channel by which they were receiving information before putting it on the air.

COMMISSIONER IWAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: You have a number of unique facilities there on the Stanford campus, one of which is the linear accelerator. And I wonder if you could say a little bit about what that facility and operation showed. Did it shut down? And also, was there any misalignment with any of the apparatus associated with that that might have resulted from the earthquake?

MR. BENDIMERAD: Not that I know of, but we — the university and the SLAC are run completely independently. They have their own facilities, people, and they're almost independent of the university. So, we — I was not in —

COMMISSIONER IWAN: You weren't involved in that.

MR. BENDIMERAD: No, I was not involved in SLAC operations.

CHAIRMAN CLUFF: That's certainly the world's largest strain gauge, in that it's perpendicular to the strike of the San Andreas Fault. I would hope someone is trying to gather the information to see if that might show signs of strain build-up that might be important for us in the peninsula segment of the fault.

COMMISSIONER IWAN: Would it be possible to ask you if — I think you probably have a closer connection with the people than we do — would it be possible if you could find out that information or get it somehow to the Commission?

MR. BENDIMERAD: Sure.

COMMISSIONER IWAN: It would be of great interest to us, I think.

MR. BENDIMERAD: Yeah, okay. I'll talk to the people there and see what they have done after the quake and what happened during the quake.

CHAIRMAN CLUFF: Bob?

COMMISSIONER McCARTHY: Am I on the air?

CHAIRMAN CLUFF: Yes.

COMMISSIONER McCARTHY: You're located within the City of Palo Alto, aren't you?

MR. BENDIMERAD: Yes.

COMMISSIONER McCARTHY: One of the things that strikes me is that you didn't turn to the government for help or anything else. You were so properly proceeding on your own —

MR. BENDIMERAD: Well, we are part of Santa Clara County. We don't — we're not — we're on the unincorporated side of the county. We don't — Santa Clara County is what — we still get — I don't know how much interaction there was with the county, really, to tell you the truth. I mean, we just basically had, you know, the resources there, and we knew what to do, and we just went ahead and did it.

COMMISSIONER McCARTHY: You made your own decisions as to the risk that was acceptable and that was unacceptable.

MR. BENDIMERAD: You mean before —

COMMISSIONER McCARTHY: And I think you were able to handle —

MR. BENDIMERAD: — before the quake. Is that — COMMISSIONER McCARTHY: Well, before the quake, and during, apparently, and right after. You described the process that you did on your own, involving assistance and your resources —

MR. BENDIMERAD: Well, also, I can turn that around and say that the county did not even call us to see if we needed anything. They went around, you know, a few days after, and just started posting the buildings that we posted as unsafe, and adding their posting to that building. So, they basically based that judgment on what we had decided.

COMMISSIONER McCARTHY: Well, I wonder if, you know, you might have given the county a little help. Okay.

MR. BENDIMERAD: I don't think so. I think we would be stretched. We were really at the limit. And we're still — we're still assessing buildings, we're still answering and reacting.

CHAIRMAN CLUFF: Well, thank you very much. We appreciate you coming before the Commission.

And it's time for us to adjourn for lunch. Lunch is available — everyone's on their own — at the cafeteria in the basement of this building, and we'll reconvene here at 1:20.

Meeting adjourned until 1:20.

(Thereupon, at 12:45 p.m., the hearing was adjourned for lunch.)

—oOo—AFTERNOON SESSION

—oOo—

CHAIRMAN CLUFF: We would like to begin the continuation of our Seismic Safety Commission hearing.

Please, commissioners, take your places. We have a very full agenda for this afternoon, and we're already running a few minutes late.

Bob Green, from IBM, is here, I think. He was here — yes.

Bob, would you please come up to the speaker's box?

And we have had an opportunity to have IBM talk to us in the past. I've been in several other professional meetings where IBM has presented their seismic upgrading plans and the work that you've done in your facilities not too far from here. And we're very pleased that you can come and talk to us. We'd like to know how those facilities performed.

So, in a few minutes, could you describe that, and what worked and what didn't?

MR. GREEN: Thank you, yes. This will be on the condition of several sites that we sampled after the earthquake.

(The following remarks were accompanied by a slide presentation.)

MR. GREEN: Want to put up the next slide?

I'll follow kind of an agenda like this: define the purpose of the investigation, show something of earthquake intensity around the areas where the data processing locations were that we looked at, and list those locations, and then make some general observations about them.

The visit that we did was two or three days after the earthquake, so most of these facilities were up and operating at that time. And what we learned was primarily from interviews with the field engineers and the installation planning people, who put them back into condition.

Next slide.

The purpose of this investigation, from our point of view, was to identify the problems or damage which could adversely affect personnel and equipment, and feeling that the demand on the data processing centers is so great that any down time is a big problem and must be minimized.

Next.

I put this up here to show a little bit of the g level associated with this, taken from seismometers. This information came from Bechtel R&D in San Francisco. And I'll just point out that the levels in the areas that I'm talking about — like San Francisco downtown was .14 g — about a block away from our DP center there. In Oakland, it's .29 g. That was down toward the waterfront. It's 14 blocks or so from where we visited. Around our main site in San Jose is about .13 g's — g levels, for those who may not know, this is the acceleration, in gravity units, taken from the seismometer readings. Down around Santa Cruz, it was .47.

And down at the bottom, I commented that a median-level earthquake is around .2 g's, a severe level around .4. And if you notice the levels, you can see that they coincide with areas that you know of that had difficulties.

Okay. Next slide.

The areas that we visited were the IBM branch office in San Francisco, a customer's location in Oakland, another customer location in Santa Cruz, and then IBM's Santa Teresa Lab, which is on Bailey Road south of San Jose, the — IBM's Almaden Research Center, which is up on a hill in South San Jose, and IBM's San Jose main plant site, just off Highway 101.

Next.

The good news is that most of these data processing installations, from the installations in the basement of the building to those on the 38th floor, were ready to operate within 24 hours. The installations that were not ready to operate generally lacked power. And there was at least one that we know of that had a lot of ceiling tiles fall in, and some water pipes break, and consequently, the facility could not be made ready until those things were fixed.

We know of several systems that switched to auxiliary power and remained up and running. Typically, the AC power lasted through the earthquake and went down within a minute or so afterward. These systems switched to the auxiliary power and did not go down at all.

DP centers, data processing centers, in the basements and on the ground floors saw much less damage or motion than those that were on the higher floors. And the strings that were bolted together had much less damage and also less motion.

Next.

Some of the concerns that we had, there was minor damage. We had cable connectors that pulled out when machines moved far enough to put a strain on these cables. We had bent covers, some bent levelers. The machines slid on the levelers and bent them, and then dropped down to the casters and were a little more free to roll at that point. A printer, there was a slipped adjustment on it that just had to be readjusted. Some of the skirts on the machines bent, and on occasion, those bent skirts popped open the cupboards.

The cables actually kind of act as a tether and keep the machines from going too far. But the upper-floor installations saw a lot of movement in comparison to the lower floors. The individual machines on casters use a wire clip around the caster to prevent it from rolling, but in an earthquake of this magnitude, the machines jumped those clips and did roll, some as much as 3 feet. The machines that stayed on their levelers and/or had locked casters only moved 5 to 6 inches.

We had bolted strings of machines that were fairly long. They had the control units in the center, and cabling went down through the center, so they could rotate about the center cables, and the outer edge of those machines would rotate about 3 feet.

Machines that were awaiting installation had no cables attached, and nothing to keep them from rolling, and they were free to move, and did quite a bit, 15 to 20 feet in some cases.

One of the CPU's dropped a leveler and a caster into a cable hole, which caused the machine to move quite a bit and cant to one side, and this pulled out its power cables, and actually broke one of the cables. Most of those cables could just be plugged in again, but some did have to be repaired.

We saw end covers that had come off. A lot of cupboard doors opened. There was a pair — there were some small machines that we make that are stacked in racks — these are like frame racks — and in one installation, these racks were free-standing in the center of the installation, with the machines stacked too high, and the entire rack fell over, dumping the machines on the floor.

Most installations, those racks are bolted to the wall, and the machines bolted to the rack, and they had no problem.

We did not see any machines tipping over. No people were injured in any of these installations that we went to. And the equipment survived very well.

Thank you very much.

CHAIRMAN CLUFF: Thank you very much. Thank you.

Questions from commissioners?

Bill Iwan?

COMMISSIONER IWAN: I have a number of questions.

Thank you for your presentation.

The first one will just be whether or not the Commission will be given a copy of your overheads. It would be nice to have that for the record.

MR. GREEN: I did give a copy to Fred Turner.

COMMISSIONER IWAN: Thank you. And I assume that we could contact you, or you could designate someone else, if we have follow-up questions?

MR. GREEN: Yes.

COMMISSIONER IWAN: And one of my questions has to do with the instrumentation. I know, after the Morgan Hill earthquake, there was some discussion — I know that there were strong-motion instruments on your various facilities, at least on the main plant site and Santa Teresa and some other buildings. I wonder if that network has been maintained since that time, and if it functioned, if you have any strong motion records that you might use in damage assessment, correlating the damage with the actual observed motion.

MR. GREEN: Those seismology records are sent out for data reduction, to be brought back to us, and we have not received them yet. So, yes, they are maintained, and we just haven't gotten the report on them yet.

COMMISSIONER IWAN: Do you consider that type of information to be proprietary, or is that available to people who are interested in studying the ground motions and building response? You know, how do you treat that kind of data? Will it be made available? Will it be released, or —

MR. GREEN: I don't know if it's proprietary or not. I wouldn't think it would necessarily be, but that would be up to the corporation to release that.

COMMISSIONER IWAN: Would it be possible for you maybe to indicate someone that would be a contact person for our staff, so that we could call them? I personally would be interested, and I think some others might be as well.

MR. GREEN: Okay.

COMMISSIONER IWAN: And then, another question I had, following your comments, you looked primarily, I guess, at data processing facilities. Did you also look at the manufacturing facilities, and would you have any comment?

I know there's a lot of specialized equipment, and in fact, one of things that've often been concerned about is the isolation tables on the air drains and so on. I know that you have spent — your company has spent a great deal of effort in trying to seismically secure those devices. Do you have any comment on how some of these retrofits behaved in this earthquake?

MR. GREEN: I'm sorry. I do not. I did concern myself primarily with data processing installations and did not go into the manufacturing area.

COMMISSIONER IWAN: Could you also maybe get — on my list of questions, give us the name of someone that we might contact about the other equipment? And again, I think that would be an interesting example for us of somebody who's really taken some good steps to make their facilities safe, and we'd like to see how they performed, if we could.

MR. GREEN: Yes.

COMMISSIONER IWAN: Thank you.

MR. GREEN: We will.

CHAIRMAN CLUFF: Other questions? Paul?

COMMISSIONER FRATESSA: I thought we were going to get through all these hearings without having to make any technical comment, but one of your slides does have something that may be — not a misnomer in the way you presented the slide, but may need clarification — the accelerations that you're reporting, I believe, are peak accelerations. That's the spike on the acceleration —

MR. GREEN: Yes.

COMMISSIONER FRATESSA: You compared them to what we'll call the normal earthquake, and you used .4 g. .4 g is not the peak acceleration, but the effective peak acceleration. It takes all of the peaks out of your normal plot, so that .4 g, as a reference, might have a spike as high as perhaps .65 or even higher. If you're following me with that —

MR. GREEN: Yeah.

COMMISSIONER FRATESSA: — it's an important issue not to take the accelerations that are being reported and compare them to the code, which is based on .4, .4 being that crazy word, "effective" peak acceleration. It's not the spike.

CHAIRMAN CLUFF: Thank you.

MR. GREEN: Thank you.

CHAIRMAN CLUFF: Any further questions?

Go ahead, Stan.

COMMISSIONER SCOTT: You mentioned that with an upper-floor installation, that they saw a lot of movement, as contrasted with the lower and basement. I just want to ask, how many stories are you talking about there? Why was there so much movement? And is this — what's it attributable to? Is it sort of a design or something you might want to — people might want to reconsider in hindsight, if they were designing such a building over again?

MR. GREEN: I think that the upper stories of these tall buildings do get a lot more movement than the ground floor.

COMMISSIONER SCOTT: How many stories?

MR. GREEN: I think — I think I said 38 stories was the highest one that we looked at. And that kind of movement caused the machines to move more than the type of movement they saw down on the ground floor, where they probably had much more of the actual vibration or the higher-frequency vibration than the very low frequency of the swinging of the building.

The movement of the machines, perhaps, will be restricted more. People may wish to do that, rather than to allow them to swing 3 feet.

COMMISSIONER SCOTT: I would think it could be done in the future with a type of basic building design with bolts —

MR. GREEN: I am not that familiar with basic building design to comment on that.

CHAIRMAN CLUFF: Thank you very much for coming.

MR. GREEN: Thank you.

CHAIRMAN CLUFF: Our next agenda item is Santa Clara County Building Department, Tom Shih — Shih? — sorry — Shih.

We appreciate your coming to talk with us. You probably are like others, with a very busy and hectic schedule.

We'd like to hear, in a very brief form, what your plans were prior to the earthquake, and how they worked, how they didn't work, and how we can work together to improve seismic safety.

MR. SHIH: Commissioners, welcome to Santa Clara County.

I'm only going to address about the unincorporated area only, because we have 15 cities in the county, and then, with the unincorporated area, we have about 100,000 population who live in the county unincorporated area.

This quake — we learned a little bit from the quake, from the Morgan Hill quake in '84, and also, we had a big fire — I think it was '85, '86, so it gave us a lot of lessons on emergency preparedness type of things.

After the quake, we did numerous, numerous inspections, and it ends up with, up to today, the last count, we have about 120 buildings total received severe damage, and another 300 to 400 buildings received either moderate or minor damage, and the other — chimneys, chimneys, and chimneys. Every place we looked, there's chimneys.

The most severe area that received the quake damage is on the Santa Clara County side of the Santa Cruz Mountains. There's a little residential community, Redwood Estates, Chemeketa Park, and the Aldercroft Heights, and nearly 25 percent of the 1,400 residential — residents over there received some type of damage one way or the other. This is on the —

We also — the single biggest damage, passing through that one little picture, is the Los Altos seminary, St. Joseph's Seminary. A six-story bell tower totally collapsed. Before that, they were just putting a cellular telephone relay station on the tower or in the tower itself, and that thing collapsed and a worker got killed. It was very unfortunate. And 300,000 square foot of the building also received quite severe damages itself. It's closed at the present time.

It is a reinforced — rather badly reinforced structure. It was built in the 1920's, and it has some masonry infill that's unreinforced masonry infill, so you can see lots of cracks inside the building, not showing too well on the outside.

The Stanford campus is also in the county jurisdiction, and it's my understanding their representative was here before the lunch break. And they did also receive quite bad damages. It's my understanding that there's 12 of the buildings we put a tag on for no occupancy at this time.

After the quake, the county, my supervisor, which is under the planning and development, hired instantly two local geology firms to study a couple areas — more than a couple areas — two geological firms to study several areas in the Santa Cruz Mountains, fearing about slides.

And fortunately, at the current time, they are pretty stable, but we — the firms are waiting for the rains, we hope, to see what happens after the rains. Probably by the time after the winter's over, we'll find out whether those areas will be affected for future rebuilding or not.

The other issue is regarding the URM buildings, the SB 547 bill. It's down to the wire. We'll have a public hearing on December the 12th. There are 65 URM buildings in the county unincorporated area, and then 50 of those are in the Stanford campus. So, we are working quite closely with the Stanford people to see how to get those things upgraded.

Other than that, I'm finished and will answer any questions you wish.

CHAIRMAN CLUFF: Thank you very much, Tom.

Questions from commissioners?

Bill?

COMMISSIONER WASTE: Well, you mentioned putting some tags on some of the buildings at Stanford, and I take it the jurisdiction line is that the unincorporated area, the part of it that you represent, has jurisdiction over the campus for this kind of activity. And therefore, you could declare a building unsafe and unfit for occupancy after that.

MR. SHIH: Right. They have put in more tags than we do, because they have, sometimes, two-hour tag, four-hour tag, whatever. But to us, the concern is those that are unsafe to occupy, so we are just tagging those buildings that is unsafe to occupy. They are, in the — in the meanwhile, they are fixing those in a two-hour or four-hour timeframe, which I'm not really concerned at this time.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: I remember, after the Morgan Hill earthquake, we looked at the rather spectacular records of the vibration of this particular building. It rung and rung for many, many, many seconds —

MR. SHIH: Yes.

COMMISSIONER IWAN: — five minutes. And I remember also we looked at the building after that earthquake, and the inside was pretty well trashed with equipment and things, the tables had fallen over, a lot of that kind of damage.

Did you learn anything and apply those lessons? And I guess my question is, how did the contents respond? I assume the building responded about the same. How did the contents respond in this earthquake?

MR. SHIH: The building received very few minor cracks at all. And we learned our lesson from the Morgan Hill quake. All the law library on the 9th floor is totally connected, and there's — I don't think — you didn't see anything about the law library at this time.

And I never learn. I can see that. Some of my file cabinets still came down this time.

(Laughter)

MR. SHIH: One thing we learned again, somehow you lock the doors, or lock the drawers. You are actually aware. So, this is one of the questions, that we have to lock our drawers by the time we go home at night. You know, that came out real — with some of my drawers that were not locked, you know, that's probably — we lost about three cabinets on my floor.

COMMISSIONER IWAN: By the way, after that earthquake, in looking at what happened here, I now lock all of my file cabinet drawers in my office. And I didn't before that, but I've learned a lesson from your building.

MR. SHIH: It takes a long time to sink that in mind.

CHAIRMAN CLUFF: Further questions?

VICE-CHAIR RIORDAN: Mr. Chairman, do you wish to have the pictures he's got?

MR. SHIH: Yes. If you want, I can make another set for you people.

CHAIRMAN CLUFF: Yes. I think that would be helpful to have.

VICE-CHAIR RIORDAN: They're very dramatic.

MR. SHIH: Yeah. That place is quite private. Most of the time — most of the people don't even know that that happens over there. This is really — you know, those damages are really severe in that particular building.

COMMISSIONER IWAN: Point of clarification.

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: You mentioned 65 URM's, and then you said 50 at Stanford. Was that an additional 50?

MR. SHIH: No. That's included.

COMMISSIONER IWAN: Oh, included.

MR. SHIH: The county has an old courthouse I'm not sure anybody talked about, in downtown, First Street. It's an old courthouse, an historical type of building, and has received severe damage. And the county is, in the meanwhile, to figure out what they're going to want to do at this moment. It's one of the URM buildings too, as a matter of fact. This is the only URM building that the county owns.

CHAIRMAN CLUFF: Thank you very much.

The next speaker is Dr. Bill Bakun, from the U.S. Geological Survey.

Bill, why don't you come up to the speaker's box?

Bill is well known to the commissioners, or most of us, having appeared before the Commission on many occasions and provided some very valuable interpretation and scientific data. And we know that the Survey has been inundated by useful things to do, so this is the first time — other than Pete Ward's very brief discussion in San Francisco last week — this is the first time someone in your position and so forth has had the opportunity, so we're here to hear what you have to tell us about the earthquake.

DR. BAKUN: Well, thank you for inviting me to come and talk to you about this earthquake. I was not clear exactly what the scope of my remarks should be, so I came prepared to talk about a couple of things. But, clearly, if you have questions, or people from the audience have questions on any part of this earthquake investigation, if I can answer those, I'll be certainly happy to try.

Before I start, I would like to introduce some visitors that are visiting the USGS in Menlo Park. As you all know, seismology always has been a science where international cooperation is very important. When you have an earthquake like the Loma Prieta earthquake, data recorded around the world is extremely valuable in interpreting what happened during that earthquake. And I'm sure that will be the case for this earthquake as well.

And the other part of the international cooperation is that earthquakes and reducing earthquake hazards is clearly an area where progress in any part of the world benefits everyone else, so that — so that the lessons learned in California about reducing earthquake hazard is of value to citizens of other countries. And, on the other hand, when earthquakes happen in other countries, we learn a great deal that benefits how we prepare for earthquakes here in California.

We're fortunate to have two delegations now visiting the USGS in Menlo Park, working with us to find out how we are studying this earthquake, and they're also very interested in how local governments and the public responded to this earthquake.

And I have here accompanying me some visitors from both the Soviet Union and the People's Republic of China, and these are members of the delegation that are particularly interested in the kinds of public hearings that we're involved in today. And if I might, I might just introduce those.

First of all, from the Soviet Union, Dr. Victor Steinberg. He's from Moscow, and he's one of eight members from the Soviet Union that are visiting us in Menlo Park.

In addition, we have three members of a delegation from the People's Republic of China. Dr. Chen, from the Institute of Engineering Seismology in Harbin, northern China. He tells me, if I come to Harbin, I must come in January to see the ice palaces. And perhaps Professor Iwan has been there at that time, yes; also, Professor Ding, from Guangjo, from the Seismological Bureau of Guangdong Province; and finally, Professor Yeh, from Beijing. He's a professor of the institute at Beijing University and also is a member of the Institute of Geology of the State Seismological Bureau, Dr. Yeh, from Beijing.

They're very much interested in this part of the earthquake that we're talking about today.

So, I want to really talk about two aspects, and they're clearly just very small parts of this earthquake.

The first is, I want to call your attention to an announcement, a request for proposals, that has just come out — I received this at about eleven o'clock today, and it's part of the way that the U.S. Geological Survey intends to use the increased funding that we have recently obtained for earthquake research.

And the goal of this RFP is to investigate the Loma Prieta earthquake in great detail, a seamless investigation, from the cause of the earthquake to its effects. And this program will make available to university participants or private industries monies to investigate particular parts of what happened during this earthquake. And it's a — it's a wide spectrum of investigations.

It has some unusual characteristics. The first is, is this is done very, very quickly. And the deadline for receipt of proposals is November 28th. There's actually two deadlines. The USGS one is November 28th. This is a joint proposal between NSF — or sponsored by NSF and the USGS. NSF, for engineering proposals, has two dates: one, November 28th, and the other, January 25th. The USGS proposals, the funding will commence January 1st. So, this is done very quickly.

The proposals will be evaluated by peer review, and since there's so short a time, the proposal length is limited to five pages. So, they're very short proposals, and the goal is to fund people to very rapidly do the necessary work to evaluate the causes and effects of this earthquake. And the goal is a complete report, to be published sometime in the next few years, describing everything that we have learned about this earthquake.

So, I call your attention to this request for proposals, and we really hope to get a very wide response and participation from the university and private sector in investigating this earthquake and finding everything we can out about its causes and effects.

And I will leave a copy of this here for the Commission.

And I should say that all participants in the National Earthquake Hazard Reduction program in the past will receive a mailing of this report. And we're trying to distribute it as widely as we can, because the deadline is close.

So, I call this to your attention, and perhaps whatever you might do to make this known would be appreciated by the Geological Survey.

The second thing I want to talk about is perhaps something — it's a sideline of the earthquake — it's something perhaps you have not heard about, but it's something that I think provides an opportunity for the future. And that is that the U.S. Geological Survey has devised what we call an early warning alert system.

And this — it occurred to us several days after the earthquake, watching workers trying to shore damaged structures in the Marina, people working on the Cypress Street structure of I-880, that we could do more. We could provide some additional warnings for damaging aftershocks. And the idea is not that different from an idea that has been talked about for a number of years, the SCAN system, the Seismic Computerized Alert Network. And you've probably heard discussions of this before.

What we — what I'm going to talk about is a very simple, cheap, dirty cousin of that complicated, expensive SCAN system, but the physics is the same. And the physics is really — really based on the idea that radio waves propagating through the atmosphere travel much, much faster than the damaging elastic waves that have to propagate from the epicentral region to structures that are at risk from damaging aftershocks.

And in this particular earthquake, where the epicentral region is about 100 kilometers from areas that were in danger from damaging aftershocks, that provided us an opportunity to devise a system that was capable of providing warning. And the idea is that after and earthquake occurs, after an aftershock occurs, it is detected, and very quickly, the occurrence of that aftershock is radioed ahead, so that people at risk several tens of kilometers away can have a warning that strong ground-shaking will reach them.

And because the physics is such that you are comparing very slow-moving, elastic waves — actually very fast, but slow compared to the propagation of radio waves — you can provide warning, and the time of warning increases with distance from the epicentral region.

And if I could show this view graph, this will make — a picture is worth a thousand words.

(The following remarks were accompanied
by an overhead slide presentation.)

DR. BAKUN: I should say that the system was operational October 28th. We actually thought of doing this on a Monday night, and we installed this system and had it operational the next Saturday morning. So, I regret that we didn't think of doing this the day of the earthquake, because we could have provided some very useful warnings, I think, to people that were at risk working in these damaged structures.

Okay. So, the basic idea is that we installed three seismic stations, shown here as stars, near the center of the Loma Prieta aftershock zone. And these — these are at Mount Loma Prieta, Mount Umunhum, and at New Almaden. Signals from these three stations are radioed to the USGS headquarters in Menlo Park. There, we have built a trigger system. When we obtain simultaneous strong signals from these sensors, it activates a trigger system, and we radio a warning to Monument Peak. Monument Peak is a high landmark north of San Jose, near Newark. Radio signals from Monument Peak can be received throughout the Bay Area.

And in particular, we then rebroadcast that warning system, and that rebroadcast signal can be received throughout the Bay Area. But in particular, we are broadcasting it to CalTrans at the Cypress Street structure of I-880. And we have provided CalTrans with a radio receiver.

This is a relatively inexpensive device, but — and it could be installed in a number of other areas, and the same radio signal and warning could be received throughout the area. However, the time of the signal of the warning is greatest as you — as you go with distance away from the epicenter.

This was installed on October 28th, and it's designed to provide warnings for aftershocks with magnitudes greater than 3.7. We chose 3.7 because that is the magnitude where workers on the Cypress Street structure felt aftershocks. They feel aftershocks at 3.7 or larger. We could have set it for other threshholds, but we just arbitrarily chose the threshold of perception at the Cypress Street structure.

This system provided 23 seconds of warning before the — before the S wave of the magnitude 4.4 aftershock reached Cypress Street. So, we're tracking warning times on the order of 20 seconds.

Let me just explain a little bit what's on this box here. There is what we call an awake button. What occurs is that we send out a signal about every minute. And if this box doesn't receive that continuous transmission, the awake light doesn't go on. So, if you were there and you see this green light going, you know the system's operational.

When it receives a warning, a red light goes on, and there's a sound that comes out of the speaker here. In addition, there's a terminal on the side that allows you to activate a wide range of other warning systems, if you wanted. For example, you could have speakers on this, you could — you could run a whole range of whatever would be appropriate for your situation.

We view this as a prototype. It is not fail-safe. We could have strong ground-shaking without a warning coming. For example, we could have an earthquake on the Hayward Fault in Oakland, and this system would not provide a warning before strong shaking from that earthquake reached, for example, Cypress Street. This is only designed for aftershocks of the Loma Prieta earthquake.

On the other hand, we have had problems with false triggers in the early, early few — in the first few days. We had problems at the beginning distinguishing bursts of radio noise from earthquakes, and we're now fairly confident that we've eliminated most of the false alarms. But it's not a fail-safe system.

What I want to suggest is that now is the time to start evaluating whether this system can be useful in future earthquakes. Now we know how to do it. We could put this system up, operational within several hours after an earthquake.

If a similar situation happened, where structures were at risk from large aftershocks, this might provide warning.

And I think there's a wide range of potential uses of this. Clearly, 20 seconds' time is not sufficient for many situations. On the other hand, it's probably very useful for a lot of situations. And I think if you asked the people living in San Francisco if they could use 20 seconds' warning before aftershocks hit them, I think they would probably say, "Yeah, we would be able to find a use for 20 seconds of warning."

But I think that apart from using it to alert the public — and I'm not sure whether that's a good idea — I think we have to think carefully about this — I think such a warning might be useful in other ways. For example, such a warning might be used to control traffic lights that monitor flow onto critical bridges. Such a warning might be used to delay trains that were leaving stations or going under the — under the bay. I mean, I think there's a wide range of potential uses, that such a system might — might have real application.

This is something that we can do now, and it's something that I think needs to be evaluated, whether this capability can be used, and how it should be used.

One thing you might do, if you wanted to provide a general warning — I don't suggest putting one of these in every house — but, for example, you could supply them to radio stations. I think there's a wide range of potential uses, and I think it's worth discussing now, before the next earthquake, whether this can be a general use.

Now, I should say that I'm not sure — I don't know what — what sort of shielding we have in this structure — whether the — if we did this again, we would put a more prominent awake light on it — I'm not sure whether we would see this inside this building. Clearly, the amount of warning would not be very great here, probably only a few seconds.

So, if this goes off, we probably will feel an earthquake here, but only a few seconds — the warning will only be a few seconds before the shaking reaches us. But in San Francisco, it would be about 20 seconds.

So, I wanted to talk a little bit about this so at least you're aware that we have now developed this capability, and we invite your comments about how it might be used, if at all, in the future.

Well, with that, I think I probably would like to stop. And if you have questions on this or on any other topic, I'll try to answer them.

CHAIRMAN CLUFF: Thank you, Bill. Let me start off with several questions.

One is, I remember serving on an advisory panel to the Survey back a number of years ago, and you people took our recommendation very seriously, and that was to look at your own buildings. And you did, and you found that you had some problems, and you provided some very interesting structural strengthening of those buildings. Could you tell us how they performed?

DR. BAKUN: Not in detail. Actually, I have not been over and walked through those buildings that were strengthened. My building was not, and it — it performed fairly well.

But I think there was some damage to the campus of the USGS, but nothing serious. I think those strengthened buildings performed well. But I am not an engineer, and I don't want to make any comments beyond that.

CHAIRMAN CLUFF: Did the — I presume that you folks had an emergency preparedness plan, and people had things to do. What could you tell us about how that worked or didn't?

DR. BAKUN: An emergency preparedness plan. Well, there probably is one. I know what we did. We were in a state of what I've described as organized chaos after the earthquake. And I've been asked why — why did seismologists not panic? And I don't think there was panic. We were — we were shaken fairly hard in our building. Probably for two reasons: one, most people don't know what to expect. They have a lot of questions, a lot of unknowns. And we pretty well knew what to expect. And the other part of it is, is we had a lot to do. When an earthquake happens, our job really begins. So, we really didn't have time to sit and think about being afraid of earthquakes.

So, there was a lot of damage, superficial damage. The power went out in our building. However, we were fortunate to have purchased, as part of the Parkfield plan, an uninterruptable power supply to operate the critical computers in Menlo Park.

As you know, the State of California provided matching funds to — for the Department of the Interior to install a prototype earthquake prediction experiment at Parkfield. And part of that — part of that monies was used to provide an uninterrupted power supply for the computer systems in Menlo Park.

And I must say that, because of that, we lost no data. The data was all preserved. The system worked beautifully. And so, a lot of what we know about this earthquake is due to the fact that Parkfield monies provided critical safeguards for the seismic data. So, although the local power went out, our data recording facilities worked, continued to work throughout the sequence, and we now have a very good picture of what happened during the earthquake.

The power system went on probably six hours after the earthquake, the PG&E power, but, unfortunately, our telephone system in Menlo Park didn't fare as well. It was turned off because it would have failed with the back-up batteries that powered it, and we didn't get it back on until pretty well late the next day. So, our ability to communicate what we knew about the earthquake to state agencies, to university groups, to anybody, was very severely restricted.

And we've since taken steps to correct that problem. But I think that that's the probably the lesson — the most painful lesson that we learned, was that our communications system was not up to the task. And we've corrected that now.

We have a number of outside lines, and we've devised some — some secondary ways to communicate if our phone system goes out.

CHAIRMAN CLUFF: With regard to the early warning alert system, did you have a chance to look at actual aftershocks and whether or not the trigger level was appropriate in terms of — you need some distance to allow the time to give the warning, and, of course, the more distance you allow, the more attenuation you get to the waves. And so, there's a distance threshold —

DR. BAKUN: Sure.

CHAIRMAN CLUFF: — for a damage relationship. Do you have any information that kind of gives you some insight on what that critical threshold ought to be? It seems to me that 3.2 — was it?

DR. BAKUN: 3.7.

CHAIRMAN CLUFF: — 3.7 was maybe a little bit low.

DR. BAKUN: That's entirely arbitrary. And we could set it for anything. It's set for 3.7 for aftershocks that are located at the main shock hypocenter, near the center of the aftershock zone. And, of course, for any single threshold, it won't be uniform throughout the 30-mile-long rupture zone, so, it will be a little — for slightly bigger earthquakes at the — at the two ends of the rupture zone. But we could set up parallel systems with different thresholds.

There's a tradeoff. We wanted to maximize the warning time, so we wanted a very simple algorithm that would turn on very quickly. We didn't want to take time to evaluate what the magnitude of the earthquake was. We wanted to be able to send out a response very quickly for all earthquakes above a threshold. And we could have set the threshold at magnitude 5, at magnitude 4.5. We could set parallel thresholds at 4.5 and 5, and send warnings to different people, depending on this range of thresholds.

So, there's really — really a very — it's a very flexible system. But we view this as an experiment. And right now, we're satisfied that it works. And as I say, I wish we would have thought of it earlier so that we could have provided this in the first day or so after the earthquake. But we have it now, and now's the time to evaluate it for future uses.

CHAIRMAN CLUFF: I have further questions, but I'm going to let some of the others ask.

Bill?

COMMISSIONER IWAN: Well, some of us have been advocating greater consideration of real-time monitoring. And I would applaud your ingenious and innovative spirit in doing what you did.

Just a couple of questions about that, and you've already mentioned the data processing overhead. You minimized that.

The first question is, what was that overhead? I assume it was something in the order of milliseconds or something like that, maybe just a second or so.

DR. BAKUN: It's a fraction of a second.

COMMISSIONER IWAN: Fraction of a second?

DR. BAKUN: Yeah.

COMMISSIONER IWAN: And the second was, did you get any response back from the user — in this case, CalTrans? Have they given you any information that would help you to evaluate whether or not that was useful? Do you have any satisfied customers out there today?

DR. BAKUN: Well, we really haven't gone searching for customers. We view this as an experiment. And CalTrans was a willing participant. Actually, by the time we had it operational, they really did not have workers at points where this kind of warning would be very useful for them. So, I don't believe they are using it, except as a way — as a feedback to us as to how it works. So, I don't believe that they have actually used it as a warning system.

But it seems to me that if we could go back and this was available two days afterward — I remember watching television, actually — that's when I thought of doing this — I finally got to watch a news program, and there was a cameraman filming a reporter who was gingerly reaching into a damaged structure in the Marina where there was a workman that was about 5 feet inside a structure that was leaning fairly chaotically, and he was shoring. And the reporter asked him, "Do you feel safe in there?" And the guy said, "I really am not sure." And it occurs to me that if we would have that — have had this system at that time, this might have been useful for a number of situations like that.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: Your innovativeness I find very appealing. The gadgetry, I would imagine, on a consumer level, is not very expensive, because you're simply dealing with a radio receiver. Obviously, at the sending level, you've got something else. What kind of cost estimates would you put on this thing at, say, a user level, the little gray box?

DR. BAKUN: Oh, it depends on how many you make, of course.

COMMISSIONER WASTE: Yes.

DR. BAKUN: I think the parts on this one are a few tens of dollars, but that's because we only made three or four of them. I think —

COMMISSIONER WASTE: It's not a high-cost unit, though.

DR. BAKUN: Oh, no. No. It's — it's — we only use things that we've used in our regular telemetry and we knew how to make work. So, there's nothing expensive in this. It's just a simple — simple receiver. It could be manufactured for — I don't know — if you put it out to Radio Shack or someplace like that, maybe $5. I don't know.

I'm not sure I abdicate general distribution of this — of this receiver, however. I think that's something that we have to think carefully how it should be used.

COMMISSIONER WASTE: But it has to have a use, because we don't really have anything else.

DR. BAKUN: Well, I — I — that's why we built it, because we were convinced that it did have a use, and we felt our role was to demonstrate its feasilibility. And it's to organizations like yourselves that have to provide advice as to how this might best be used.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes. I was curious to know, in terms of the measurements that USGS received in regard to the earthquake, do you get your information soon enough that it can be communicated to various local jurisdictions, to kind of — in response to what they need to do?

I guess an example would be, if you do get certain measurements or certain readings, say, in the Santa Cruz area, during the past earthquake, a lot of the people north of Santa Cruz did not know what was happening south of the Santa Cruz boundaries. And I was wondering if some of that data can be utilized in terms of this response-type activity.

DR. BAKUN: Are you talking about aftershocks, the occurrence of aftershocks?

COMMISSIONER UMEMOTO: Well, no. It can apply to aftershocks, and probably more directly to the initial quake itself.

DR. BAKUN: Well, that would be part of a SCAN system, and I can briefly describe what a SCAN system is.

It would be something like this, where you would have sensors along the active fault zones. And the outputs of those sensors would be radioed to a central site, and that central site would analyze all the signals coming in, and very quickly come up with an estimate of the location, the time, and the magnitude of the earthquake, and would radio that out, broadcast that out, and that information then could be received by any number of points.

And the idea, then, would be that each user, each business, each government, would have thought about what they would do with a few tens to maybe up to a few minutes' warning, how they might use that information. And they would have to have thought it out so that it can be implemented automatically. And there's a potential wide range of things that might be done.

That is feasible. That, I believe, the cost estimate was something like $500 million for California, if I remember right, on that order. It's something that is completely feasible, and, in fact, it's been evaluated and probably you know the results of that evaluation very well. I find it — personally, I find the results difficult to accept.

The State of California authorized CDMG to conduct a poll, and they polled businesses whether such a warning would be useful. And the surprise was that the people they polled indicated that such a warning would not be useful to them. So, the State of California has concluded that such a SCAN system is not worth building.

I find it difficult to accept that conclusion, but that's the result of the poll.

CHAIRMAN CLUFF: Let me clarify that, Bill, because I was involved in both ends of helping CDMG and thinking about it, plus some of the response.

The question they asked the people to respond to was, "If you got the signal and had automatic shut-down systems" — it was aimed at having automatic shut-down systems, and the message that came out loud and clear is that no one wanted to trust an automatic shut-down system, that they could get — and they're trying — the indication was only one that — I think 10 seconds, and that had — the information that came back from a number of people that I talked to was that if they had a longer period of time, and it was long enough for an individual who could make some judgments on certain things, that that would be useful.

And so, the system that you have here kind of fits that. And so, I see a much wider acceptance of this than perhaps what they were thinking about.

DR. BAKUN: Um-hmm.

CHAIRMAN CLUFF: Let me follow up with another comment and then question to you.

Yesterday we heard testimony from several individuals of some unusual occurrences in the Santa Cruz Mountains, of ground-fissuring, a truck thrown in the air, some other stories that I find personally intriguing, and then Karen McNalley came and gave us some scientific indications of some recordings that, if her recordings are valid, indicated that there may have been accelerations in excess of 1 g in some localities.

And that's kind of a question we've often worried about. The CDMG and USGS strong motion programs didn't indicate accelerations anywhere near that — probably .64, I think, was the strongest. And — but yet the stories that we hear, the truck that we saw photographs of, some of the houses and buildings, from the photographs, they were kind of convincing that there was some real violent ground motions going on.

Does the Survey — is the Survey following up, trying to — we need good scientific documentation from, I think, a combination of a good engineering geologist and a structural engineer, so that we don't have a person not qualified to make some judgments from the observations, that it's a combined attempt. Is anyone trying to get this very valuable data that's perishable?

DR. BAKUN: Well, we have talked about it. And it is clear that there are — this is an area, including Santa Cruz itself and the area near the epicenter, where there are reports that are consistent with very high vertical accelerations. And accelerations of 1 g, that's not unheard of. As you know, there was a very brief spike of 1.29 g recorded in the Morgan Hill earthquake, but this indicates that it occurred over a significant duration of the shaking and that it was much more widespread.

I think it's worth pursuing, and I know it's been talked about. And it's something to worry about, because if we don't focus on it, time will pass, and it will be too late to reconstruct and get the testimony about what was actually observed.

So, I think it's worth doing, and I don't know that we're doing it yet, but we have talked about it, and I think it's something that should be pursued.

CHAIRMAN CLUFF: Tom, did you have a question?

EXECUTIVE DIRECTOR TOBIN: Yes.

Bill, I asked a question before you came up, and perhaps if you could elaborate a little bit on that, my question as to — this fault ruptured in a bilateral fashion rather than from one end to the other. Could you just describe that, please, and the implications of bilateral ruptures compared to some of the other kinds?

DR. BAKUN: Yeah. It is — it is not uncommon for earthquakes — for example, the Coyote Lake earthquake in 1979, the Coyote Lake earthquake, or the 1984 Morgan Hill earthquake — to start at one end of the zone of rupture and propagate in one direction, either northwest or southeast. And — but in this case, the main shock is located near the center of the aftershock zone. And by bilateral rupture, we mean that the rupture started in the center and spread sideways in both directions.

And the duration of strong shaking typically reported for this earthquake was about 10 to 15 seconds. That duration of strong shaking is really a combination of two things. The first is the time of ground fracture at the source. And in this case, the earthquake started near the center, and it had to propagate to both ends. The total rupture length is about 50 kilometers, so it had to propagate 25 kilometers in each direction, at about 3-1/2 kilometers per second. So, the duration of fracture during the main shock was on the order of 8 to 10 seconds.

The other part of it is, what is the structure beneath the point where the shaking is being observed? Clearly, you can have structures that resonate and prolong the strong ground-shaking. So, I think it's very, very common to see a distribution of times, reported times of strong ground-shaking.

I think that the 8 to 10 seconds is consistent with the time I would expect for actual fracturing during the main shock, and really not much reverberation.

So, I think that the 8 to 10 seconds is consistent with the duration of rupture during the main shock. And it's clear, from what we know about this earthquake, that it was a high-stress-drop earthquake that generated very strong accelerations for a short duration of time.

And I — following up on our conversation earlier, Tom, you asked, "If the duration of strong ground-shaking would have been longer, would the effects have been more severe?" And clearly, the answer is yes.

There were a number of areas that had ground failure, liquefaction problems, in this earthquake. The location of those places is no surprise. They're the same places that had these problems in earlier earthquakes, in 1906, 1865, 1868; the reports are consistent. However, there were a number of other areas where there was liquefaction problems reported in 1906 that did not have severe problems in this earthquake.

And the answer, I think, is quite simple: those particular points probably would have had liquefaction problems if the duration of shaking, strong shaking, had been longer. I think they were strongly shaken, but they had not shaken long enough to cause the severe problems that we saw in the Marina, for example.

CHAIRMAN CLUFF: Bill, coming back to the bilateral/unilateral rupture and duration, had this been a unilateral rupture, say, from south to north, as some speculate there might be, would the duration have been the same or different?

DR. BAKUN: I think the duration would have been longer. So, I think that we could very well have had more severe problems than we did.

CHAIRMAN CLUFF: Okay. My own judgment about that is that the duration, for a magnitude 7 with a one-direction propagation, would have been perhaps twice as long.

DR. BAKUN: Yes.

CHAIRMAN CLUFF: And I agree with your conclusion that, in my judgment, in flying over and looking at these liquefaction sites the day after the earthquake, the pore pressures that led to the liquefaction were probably just beginning, that it had only initiated liquefaction. Had we had another 5 to 10 cycles of strong shaking, we would have probably seen widespread and very more damage.

DR. BAKUN: Yeah. I should say that part of the
— part of the effort that we seek in this RFP is to investigate sites throughout the Bay Area that did have damage because of liquefaction, and also sites that didn't have severe damage, but perhaps were close to it. We want to really, as much as we can, look at the complete picture, to try and evaluate the hazards for the next earthquake in the Bay Area. And we all know there will be another earthquake in the Bay Area, and will more likely than not be closer to the population centers and will cause us more problems.

CHAIRMAN CLUFF: Any further questions?

Randy?

COMMISSIONER PESTOR: Yeah. I — it was interesting, because I just got back from a panel that I was on with James Berklund, where he was talking about his predictions. And after he got through with that, I think one of the things that came to my mind is that, you know, whether you know three days in advance or a week in advance or an hour in advance of an event, you know, there's still like no substitute for, you know, your water heater being secured, and the house being bolted to the foundation, and the china cabinet being bolted to the wall.

He gave an example that — I guess USA Today had an article yesterday or today that a woman in the area had put her china away, so she felt that the prediction was worthwhile. Of course, if the china cabinet had fallen on her and killed her, it wouldn't have done much good.

But I think that another issue that we've been hearing about — last week we heard from some people from UC Berkeley that were saying that some of the buildings were rated "very poor" in the Degenkolb study, they were considered to be safe. And I think that despite the scenarios for the San Andreas Fault and the Hayward Fault, outlining numerous problems with CalTrans highways, they still have not, you know, pursued any improvements on those. So, it's like, even if they knew about it or had the device that you have, they considered them safe and okay. You know, I don't know whether anybody's going to use it.

I think one thing that's very worthwhile that you mentioned is the person that was shoring up something, and also, you know, if you were under a house, you know, trying to fix it after an earthquake, I think that's where something like that would be — could be very useful, is immediately afterwards, when people are going inside, for instance, and getting their belongings, or trying to do some quick saving of a structure. You know, I think that —

DR. BAKUN: It's —

COMMISSIONER PESTOR: — that's a possibility.

DR. BAKUN: But I want to — want to emphasize again that this is not a fail-safe device.

COMMISSIONER PESTOR: Correct.

DR. BAKUN: It's — we can have strong shaking without a warning, and we can also warnings, false alarms. So, that's — we are not trying to sell a perfect system here, and it never will be perfect. We will always have those problems.

CHAIRMAN CLUFF: Thank you very much, Bill.

The next speaker is Scott Baker, building official of Los Gatos.

Scott, welcome to our Seismic Safety Commission hearing.

MR. BAKER: Thank you.

CHAIRMAN CLUFF: And we'd be pleased to have you be as brief as possible and kind of get to the point of what worked, what didn't, and what can we learn from this event?

MR. BAKER: First thing, I'd like to address the device that the gentleman was talking about before me, and that one of the most difficult decisions that I had to make was when to allow people into structures that I knew were unsafe, but I felt fairly comfortable would stand as they were. But what was going to happen when the next aftershock came along?

That was a very difficult problem for me to wrestle with. I had many meetings with men in total rage and women in tears, and their total livelihoods and businesses locked up inside those cordoned-off areas that I'm telling them they can't go into because it's unsafe. So, a device like that, while not perfectly, I'd like to hedge my bets as far as I could. And we'd be interested in seeing folks follow that up.

Basically, I think one thing I would like to say is that an earthquake is a geologic event; a building failure is a structural event. But let's not lose sight that this is really a human event as well, and that everything that we really do should be focusing towards bringing the population back to normalcy.

Our plan worked relatively well. However, we modified it almost completely. Basically, I think, when you look at an emergency plan, you identify that there are definite things that have to be done: provide shelter, provide information, first response, you know, assessment of damages. All those things do have to be taken care of.

The way that your plan works may change entirely, though, once — depending on the situation and the scenario, who's available, who's not available, who's in the office, who's not, who can get back in, who can't.

We were very fortunate in that I had sent one of my staff members to the ATC seminar only weeks before the event. We had met, the town had ran its mock run, and we kind of had a pretty good handle on which way we were going to go, and things unfolded for us fairly well. Had we not had that preparation, we certainly would have been a lot worse off.

Communication is always a big issue. Phones were down for days. Probably, if we had more hand-held units — cellular phones came back on-line far ahead of the regular phone service — those things would have been very beneficial in carrying out our tasks.

Some of the simple things that you don't even think of, we didn't have. At one point, it was a scramble for tape to be able to post the placards on the buildings. It's just kind of the small, little things like that. Ran out of green paper for the green ATC 20 placards, had to put them on white — I'm still hearing about that from some owners.

After, what happens is that there is the event, there's the calamity, the disaster, but then that sort of grades right into the rebuilding, into the process to put it all back together. And from a building official's perspective, it actually gets busier and a little more hectic from that point on.

I think it's very important that local governments remain responsive to the people in its jurisdiction. We hold — we were holding public meeting all along — in fact, we have one scheduled tonight — to talk to people about strapping their water heaters, how to get a permit, the things that we've done to streamline the process.

We basically are no-fee permits. We're trying to fast-track plan reviews as quick as we can. Normal is a two-week turnaround on a plan review. We've hired extra staff to do it in days, you know.

So, we're trying to get things back to normal as quick as possible here.

Pretty much, the type of damage at we saw was great damage to our unreinforced masonry structures. The Town of Los Gatos is a very old and proud historic town, many, many structures built right around the turn of the century, and even before, and unfortunately, those buildings did not perform well.

We also had the other classic example of cripple wall failure in our older districts as well, just a substantial number of homes. Perhaps as many as 10 percent of our homes have suffered some sort of structural damage, and the majority of that is a cripple wall failure.

Some of the things that we're doing to rectify that — the other major problem, of course, is chimneys — lots of unreinforced masonry chimneys out there. We have adopted an ordinance which says now you have to come back to code-of-the-day criteria or provide engineering analysis to justify what you're proposing.

Another interesting thing is how to coordinate the excess of personnel that you have. One day, I'm a field staff of three, and on the Friday following the event, I had over 100 people in the field. It's pretty important that you consider how you're going to handle that, how you're going to divide the responsibilities and push the level of the responsibility way down in your organization.

If you're the kind of building official that has to have total control of everything, you may not perform very well.

All in all, I think that sums it up for me. Is there any questions of the Commission?

CHAIRMAN CLUFF: Thank you. We appreciate your brevity in pointing out some of the things that you'd like to improve.

We have further questions?

Barbara?

VICE-CHAIR RIORDAN: We heard from your mayor and city manager this morning, and I specifically asked, because I do represent local government on the Commission, about the securing of additional building inspectors. And apparently, that worked well for you, because you had sort of your own network, perhaps, plus you had the opportunities of the state to get building officials.

I'm wondering now, because you said you had to gear up, and it's obvious to me now, in thinking about it, that you've really got a bigger problem maybe facing you for the next few weeks, because you've got so many that you need to have inspected, et cetera. Are those building inspectors hard to find?

MR. BAKER: Yes, they are, because the real emergency is over: Unfortunately, a lot of it now is what they call the hand-holding phase. You go out and you visit the senior citizen, you explain to him that the crack is not a structural problem, that their house probably will be standing tomorrow. But that's still just as important. It's an aspect of this event that we — that we can't let go, that we need to keep working on.

I'm having great difficulty now in finding volunteer help to assist me in that process. And currently, I have probably a week's backlog of those kinds of inspections, right now.

VICE-CHAIR RIORDAN: Well, do you have any thoughts about if you could think about it and know this in advance, would you do anything? Would you have some contracts in place, maybe, that you might use to bring people on board out of private companies, say?

I don't know. That's why I'm asking, because I see this as a real problem for local jurisdictions.

MR. BAKER: It is a real problem. And actually, my ascension through the trade has allowed me to meet plenty of people. And I actually now am calling on them personally, no longer calling on OES or CALBO to try and provide me with people, because it's just not there.

So, a private — we also have hired an additional three temporary staff that we normally don't have. But I still — I still have a need, on the short term, the next few weeks, as you say, to have additional staff.

VICE-CHAIR RIORDAN: Thank you.

MR. BAKER: You bet.

CHAIRMAN CLUFF: Further questions? Stan?

COMMISSIONER SCOTT: Just a quick question. You mentioned a lot of URM damage, and cripple walls failing. I just wonder, do you have any thoughts to guide us for the future, how to deal with this very tough problem or set of problems? What should we be doing in the future to try to mitigate this kind of — these kinds of failures? I mean, what is realistic and feasible? What sort of — do you have any thoughts on that?

MR. BAKER: I certainly do. It was mentioned to me that if the banking industry became as concerned about structural integrity of buildings as it was on termite and pest reports, that most of our problems could be cleaned up in that respect. I think public awareness, of course, is a very important issue as well.

And we're going to a public meeting tonight, and one of the things that I'm going to address is, "Hey, for a few hundred dollars of plywood and some screws, you can deal with the cripple wall problem." Public awareness is very important.

The URM question is a tougher one, because you're almost always dealing with a commercial structure in that case, a very old and historic. We were in the process, as were many other jurisdictions, of dealing with Senate Bill 547. We, unfortunately, just didn't know the timing of the earthquake, to accelerate our mitigation program.

I think folks are working on that issue, probably better than they are on the cripple wall issue.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: I'm glad you're here today, because a few days right after the earthquake, your name was mentioned in one of the more interesting stories that I was confronted with during the earthquake, or right after it. And that was a situation that I heard that you needed — well, say, inspectors immediately, and the result was that, I had heard that the next day you were going to get 100 building inspectors on your front door, from zero to 100, if you will, in one day.

My question for you, I think that happened, and I would be very interested if you'd give us your reflections on what you did in the way of instruction of those inspectors, to gain some sort of uniformity.

And the second question, somewhat related, is your comments on the need, in lieu of building inspectors, for structural engineers.

MR. BAKER: We were — yes, it's a — it's an overwhelminng process to think that one day I have three field inspectors, and the next day I have to organize and coordinate 100. I was very fortunate that we had attended the ATC seminar. We basically handed the inspectors the detailed or the rapid assessment sheets, and just sort of walked them through that very quickly, asked — told them how we wanted to complete that form, and to return that. So, in that respect, we got a great deal of uniformity in that.

And, in fact, you'll see — if you go into my office, you'll see great big binders, actually four of them, full of all of our ATC 20 reports. So, that was very beneficial.

If there's any jurisdiction who has not seen that format, or does not have a modified version of that format, I would recommend that they do so immediately.

My apologies — the second part of your question was, sir?

COMMISSIONER FRATESSA: The thought as to the need for structural engineers in addition to or in lieu of or —

MR. BAKER: Oh. You —

COMMISSIONER FRATESSA: — compared to building inspectors.

MR. BAKER: You really can use a full range of personnel. And we, even on the first day, were using our engineers, public works people, to even do some of our rapid assessments, that you don't really have to be a structural engineer to see if it's off the foundation or there's some sort of problem like that. But when you get into your more detailed analyses that are required, structural engineers were very beneficial. We would send them into the unreinforced masonry structures, assembly type buildings and things like that, where a more detailed and a demanding look should be performed.

So, you can use a whole range of folks. You just have to know how to parcel it all out.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much.

MR. BAKER: Thank you.

CHAIRMAN CLUFF: The next speaker is Ron Buckhout, environmental and safety engineer for XICOR Corporation.

MR. BUCKHOUT: XICOR, sir.

CHAIRMAN CLUFF: XICOR — sorry.

MR. BUCKHOUT: That's fine. Everybody gets it a little differently.

On behalf of XICOR, and certainly for myself, I'd like to thank you for the opportunity of being able to briefly address the cases that we've discussed today.

I am the corporate manager for environmental health and safety at XICOR. XICOR is a medium-size semiconductor facility, employing approximately 1,000 people. We are located in Milpitas, California. And I would like to address my remarks today divided into specifically three parts, the preparation for the event, the earthquake that occurred, the events during and immediately after the earthquake, and lessons learned.

As it relates to the preparation, the preparation was based in large part on my own personal experiences and observations in Managua, Nicaragua, Sylmar, Mexico City, and other places where I worked, either with the military or as a civilian disaster relief — part of a civilian disaster relief organization. And what I observed and learned primarily from those experiences, I brought with me to XICOR.

(The following remarks were accompanied

by an overhead slide presentation.)

MR. BUCKHOUT: These observations resulted in certain assumptions which were used to prepare XICOR for an earthquake event. The assumptions, as are indicated up there, basically, are that, number one, in a large earthquake, we would receive no immediate assistance. Therefore, we must assume self-sufficiency, as it were, relative to immediately after the earthquake. And then, in addition to that, XICOR's physical location in relation to the majority of the city emergency services is such that longer-term assistance may be difficult or impossible.

I'd like to explain that briefly, in the respect that XICOR is located on the opposite side of I-880 from the City of Milpitas, though technically still within the city limits. Should an earthquake drop the Montague Expressway overpass and the 680 — or, I'm sorry — the 237 overpass, we would be a virtual island. It would be very difficult for the city services to get to us at all.

The third thing we wanted to address was, the nature of the chemicals and gases used in the semiconductor industry is such that we should take a very aggressive approach toward hardening our facilities, specifically the fabrication and fabrication support facilities at XICOR.

Number four, prepositioned caches of supplies and equipment should exist at all locations to help provide for both short- and long-term relief efforts by the XICORians themselves.

And lastly, that employee training, drills, and emergency response team training should be intensified to include a worst-case scenario.

Now, ladies and gentlemen, please remember that these points were identified as items to be addressed by XICOR over two years ago, when we first considered earthquake damage as a serious concern.

Based on that, then, I would like to emphasize Items 3, 4, and 5 of the overhead there, specifically Item 3, the hardening of our fabrication facilities.

Under the direction of our consulting seismic engineers, Forrell and Elsesser, and specifically with the work at the time of someone I believe is known to you, Fred Turner, who I believe now is on your staff — who, at the time, was working for the seismic engineers — we undertook to upgrade our facilities.

The facilities we were upgrading were originally planned and constructed in the early part of 1980 as a tilt slab operation, and our building essentially was upgraded to UBC standards, 1985 or better.

Specifically, we thickened walls; we secured walls to the slab on 6-foot centers, using 1/2-inch steel plates, 3/4-inch bolts, and epoxy around the entire perimeter of our facilities; we secured the roof to the walls, using wall anchors; we provided steel plates at the panel joints, at the wall panels surrounding the building; we provided additional load-bearing columns where necessary; we anchored all our roof equipment through the roof to glue lams or to the roof joists themselves.

And then, in addition to that, in addition to the seismic upgrade, XICOR undertook to upgrade its chemical storage and its gas facilities to include coming into voluntary compliance with Assembly Bill 1021, the Model Toxic Gas Ordinance. Now, we did this even though the City of Milpitas has yet to adopt that ordinance.

To give you some idea specifically of what we're talking about, it took almost two years to effect this upgrade, and the cost was estimated at somewhere close to $10 million, so we had a sizeable investment at that point in the upgrading of our facilities, obviously.

Item 4, prepositioning of supplies and equipment. One of the lessons we learned from the Mexico City earthquake is that in spite of the proliferation of the heavy equipment and the modern medical facilities in the area, what was needed immediately after the earthquake was things such as hand tools, picks, shovels, gloves, things of that nature, as well as local supplies of medical supplies. Firefighting water supplies were in short supply, and road damage prevented access to some of the areas.

XICOR maintains maintenance equipment, including the hand tools, as previously mentioned, as well as a large cache of medical supplies that we have spread out throughout our facilities. We also maintained — and this was not part of the upgrade — this predated the upgrade — a 300,000-gallon firefighting water supply, which is capable of providing firefighting water, not only to our facilities, but to almost anyone within our business park, providing the fire department can get a pumper hooked up to one of the local hydrants.

This system, incidentally, doesn't rely on PG&E power. It has its own internal power source and pumping sources.

Item 5, as it relates to the employee training drills and emergency response team training, our decision to provide self-sufficiency in the event of an earthquake also involved developing resources from amongst our employees base. To that end, XICOR trained over 50 of its employees in advanced first aid, so that should multiple casualties occur, not only did we have the equipment to deal with it; we had the people trained to handle the situation as well.

XICOR also maintains an emergency response team who are responsible for securing sensitive and potentially dangerous equipment in the event of an earthquake, and as the incident commander for the team, I'm on call 24 hours a day, seven days a week.

And they test me periodically, usually at three o'clock in the morning, to see whether that works.

Evacuation drills are held at least quarterly. Assembly points are maintained, head counts are taken to assure 100 percent accountability after an event.

The command and control for all of this is done through radio communications from an emergency operations center, with battery-operated radios in the lobbies of each facility, and with the emergency response team members.

The emergency operations centers has its own emergency power supply, toxic gas monitors, remote monitoring and shut-off equipment for toxic gases, fire monitoring and alarm equipment, as well as back-up emergency supplies and communications equipment. It's manned 24 hours a day, seven days a week, and it was built primarily to support an event such as what we have recently been involved in.

Given all of that, then, I would like to move on now to the earthquake itself and the events immediately following the earthquake, as it was experienced by us.

When the earthquake occurred, the emergency response team members and management of each building first assisted the people out of the building and got them clear as soon as possible. Due to the number of drills, the employees knew to assemble at their designated assembly points, which was done without incident, after which management determined accountability of the people.

Myself and my technician responded to the emergency operations center and established an incident command at that location. Because of the availability of floor plans and prints in each of our buildings, located in the emergency operations center, and because the emergency operations team were familiar with all of our facilities, each building was checked, first, for occupancy; secondly, for life and environmental safety; and third, finally cleared for re-entry based on a visual inspection of each facility.

With the exception of two individuals, all individuals were accounted for less than 12 minutes after the event occurred. The two unaccounted-for individuals were eventually accounted for. They immediately walked out of the building, got in their car, and took off, and that was done before we had to make the decision to re-enter a building to search for them.

The ERT members determined that all the safety systems were operational, that there was no chemical or gas release, and that none was imminent, and the first two buildings were declared safe for re-entry within 40 minutes of the event.

The fabrication facility was checked eight different times, which I consider appropriate, considering the complexity of the equipment and devices in the building, and then that building was also cleared for re-entry. And as anticipated, the first fire engine responded to XICOR approximately 40 minutes after the event occurred.

The incident command called the problem approximately one hour after the event, returning to normal status, with the obvious exception of aftershocks.

The initial visual inspection of all the facilities showed absolutely no structural damage. This was confirmed by an in-depth inspection of each facility by myself and the facility engineer, followed by a separate inspection by our consulting seismic engineers.

There were no reported employee injuries, with the exception of one employee with a pre-existing heart attack, or a heart condition, who had a problem because she left her medicine in our fabrication facility when she evacuated. She was taken to the hospital, under my direction, and released the same day. So, there was essentially nothing serious involved there.

All told, under lessons learned, then, the first thing is that preplanning is everything. Obviously, we went to a great deal of time and effort, and XICOR was willing to invest both the time and money in preparation for this event. And when the event occurred, we were prepared.

Resources that were available to XICOR, because of that preparation, weren't necessary for this level of event, primarily because of the seismic upgrades and the voluntary compliance with AB 1021. Had a stronger event occurred, the resources were available to us, obviously, and we would have utilized them.

Number 2, that an after-action report self-critiqued our actions during the event. We learned from this critique, and we continue to upgrade our response capability.

For instance, the employee with the heart condition has been given a specialized container, which she can now carry with her everywhere.

Back-up batteries for portable radios were purchased. After an hour of steady use, we found the original batteries became weak, despite the manufacturers' claims to the contrary.

Additional alarms are being installed in the emergency operations center to provide system status for critical facilities-related equipment, in turn freeing up the manpower formerly used to physically put people out there to check that equipment.

Telephone communications were difficult, at best. Road transportation, considering where we are physically located, was impossible after the event. And every attempt was made to allow the employees to call home.

Portable broadcast-band radios and portable television sets were provided, and they served as the only input as to the magnitude of the problem. This had both a positive and negative effect. It created people problems as well as assuring them, the majority of the people, that they — their areas of their home and their families were not necessarily affected. This created a lot of concern on the parts of some people.

In retrospect, we're now looking towards developing some sort of remediation towards these people-type problems, as to whether or not we just let them go if they want to go, if we do so, are we adding to the burdens of the arteries in the area? — things of that nature. That's being addressed now.

In spite of the availability of emergency power and the large number of flashlights, there are never enough flashlights. If I had twenty times the flashlights, I'd still have problems, I'm sure.

Communications during the first critical minutes of the event were vital to the command and control. I simply could not have maintained command and control as the incident commander had I not had portable radio communications. Hand-held two-way portables made that difference, and without them, control would have been lost. And it's obviously important to prelocate the radios. It does absolutely no good to have all the radios sitting in my emergency operations center, when part of my problems are located half a city block away.

Lastly, or second to last, develop rapport with local responding agencies and surrounding businesses. One of the things we've done is we've encouraged the Milpitas Fire Department to train on our facilities, not only training on our facilities with the firefighters who would respond in the event of an emergency, but bring their inspectors on board and let them train on our facilities, bring the fire marshal on board and allow them to do the same thing. That makes them not only familiar with the facilities, but familiar with me.

This paid off when, 40 minutes after the event, the fire truck rolled into my parking lot, and instead of them coming over and demanding a report from me — and I was kind of busy at the time — they simply stuck their head out the window and said, "Hey, Ron, everything okay here?" And I said, "Yeah." And they said, "Fine," and drove away.

This was built on the rapport, knowing that they knew what my background is, they'd been to our facilities, they understood what our concerns were, and they felt comfortable in hearing me say, "We don't need you." And, obviously, they were very badly needed elsewhere in the park.

Lastly, the critique, learning from our experience. Again, we discovered that preplanning is everything. All in all, if I had the overall comment to make regarding the entire event, my comment would be that the difference, as it applied to us, was based on the fact that the company made its commitment well ahead of the event, spent considerable time and a significant amount of money to get ahead of the problem. And as a result, we fared a lot better than some of the people who perhaps weren't that far down the road.

I would certainly encourage the Commission here today to make an effort to get that point — and I know you have in the past — obviously, that's what you're all about — to make that point again, undelined, if you can, to let the people know that this is the time to prepare for it, not a week before or two weeks after.

Ladies and gentlemen, what are your questions?

CHAIRMAN CLUFF: Thank you very much.

Questions from the commissioners? Dan?

MR. BUCKHOUT: Yes, sir.

COMMISSIONER EBERLE: It's not a question, but maybe I could turn that around and ask you to help us. I think that story, that would be very helpful if you got that out, that the advantage of preparing — for the businesses, it's untold advantage, and we try and stress that wherever we can. But certainly, in the business community, people that have experienced that would be most helpful to others.

MR. BUCKHOUT: We are doing that. I sit on a number of boards, commissions, organizations, et cetera, relative to emergency services, and I plug this every time, not from the standpoint of being XICOR's manager, but from the standpoint of, "Hey, this was the experience we got, and you might consider it."

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Keith.

MR. BUCKHOUT: Yes, sir.

COMMISSIONER UMEMOTO: Yeah. We probably should pretty much applaud you for all your effort, on one hand, but then, on the other hand, determining why XICOR all this initiative, what kind of management decisions, what was the kind of process of the decisions, that we can kind of convince other corporations to take — pretty much follow suit?

MR. BUCKHOUT: Well, thank you, first of all, for your comments. I don't think that I as an individual can certainly take credit for it. I'm not sure any one person can, short of the president of the company and — because he had the final say in the decision-making process, obviously.

The semiconductor industry is a terribly, terribly expensive industry to be in. The start-up value of a semiconductor firm is in the tens to hundreds of millions of dollars, depending upon the size of the effort that they are planning to undertake. Obviously, damage to an industry with that level of investment is significant.

At any one time, our work in progress easily exceeds a million dollars, at any one time in any one area of the fab. So, that, in turn, creates a significant monetary burden if we were to lose that. Those things certainly were driving part of the problem.

When we chose to upgrade, though, a significant amount of concern was raised relative to the issues of the environment. Now, the majority of the money that was spent was spent to come into compliance with the Model Toxic Gas Ordinance. It is an extraordinary expensive ordinance to come into compliance with. It requires virtual rebuilding of the facility, and doubling the cost, because everything has to be doubly contained, remotely operated, et cetera, et cetera.

But when you look at the possible problems that could occur if you chose not to do that, in an event like this, you can easily put that money aside. Obviously, the long-term event, from a chemical spill or something, or the damage to the environment, or employee injuries or community injuries, can't begin to weigh against those kind of figures.

And my personal feeling is that the company came as much from that standpoint as from the standpoint of trying to protect their investment, as it were. Without patting the company on the back, I guess you'd call it enlightened management. I hadn't thought of it in that term, but I guess that's what it is.

Did I answer your question?

CHAIRMAN CLUFF: Thank you very much for coming before us today.

MR. BUCKHOUT: Thank you.

CHAIRMAN CLUFF: Next agenda speaker is Rol Sharpe, structural engineer.

Rol, welcome to our Commission hearing. We're looking forward to your observations and how you can advise us on what worked, what didn't work, and how we can improve seismic safety.

MR. SHARPE: Well, as a client said this morning, he says, "How about moving to Nevada?" And I told him he could have problems there too.

Thank you for inviting me, and I know quite a few of you. I'm Roland Sharpe. I'm a consulting structural engineer with offices in Cupertino, and I also work in San Francisco.

I was asked to make some general comments, and one was about earthquake response. And then I'd like to talk a little bit about what I've seen on retrofitted buildings, how did they respond, and a few comments on the newer buildings, and then I'd like to make some suggestions that the Commission might want to consider or endorse.

What I found is that the earthquake has always found the many weak points that are in structures or buildings, and the infrastructure and our utilities and communication systems. I don't know about you people, but I had — my home did not have power for two days, and we were without water for one day because the water system had so many leaks in it that they decided to shut it down so they could repair the leaks before they ran out of water.

But the organizations that I've came in contact with seemed to respond quite well. Most of my effort was with Stanford University. They called me first thing Wednesday morning and said, "Could you help us out?"

And so, then, the next three days I spent looking at buildings that were questionable or that people had laboratories there that — experiments that had to be tended to, like animal experiments and such, or other areas where they had very extensive art collection, and "What can we do? We've got this very badly damaged building, and how do we retrieve our art objects, because they're worth quite a few million dollars?"

I would say that Stanford got a well-organized effort underway. They did make use of the ATC documents. They set up 20 two-person teams, and sent them out to investigate 400 buildings. And I looked at about 20 or 30 buildings total. But these groups would then, based on their judgment — and most of them were not engineers — if they saw a lot of cracking and a lot of damage, they posted them. And then, either I or another engineer was asked to go back and look at these to determine later whether they could be occupied or should they remain closed.

And I also helped out Syntex, a firm that I've been doing consulting with for a number of years. They're right across the street from the VA Hospital in Palo Alto that had a base acceleration of .38 g. And Syntex, when they — right after the earthquake, they had their facilities project staff look at the buildings, and also the people that were responsible for the building. The building manager, so to speak, was asked to look at the building and tell them if he saw any damage, and then they would get somebody there to look it over.

I was called in to look at some questionable buildings where they had damage, and they had evacuated them, and they wanted my opinion whether they could move back in.

The one building, it looked like it might be bad damaged, but actually, looking at it closely, it wasn't going to cause too many stability problems unless we had another big earthquake. And they went ahead and got the original design engineer to come up with some remedial measures, and the building is now occupied.

They had another relatively new building where they lost a lot of brick veneer. This — fortunately, there was nobody right adjacent to the building, but there was a big pile of brick veneer in several areas, and people could have been injured badly by that. I guess that means we've got to go back and look at our code provisions for tying brick veneer to walls, especially plywood walls.

I also saw other areas — buildings in the area that had lost veneer, both with wood backing and some with concrete wall backing.

Then, in another building, they lost the suspended ceilings and light fixtures, and that demonstrated the building code requirements now for putting in bracing and also a compression strut in the ceiling suspension system, that this is a very good item, and also to have two anchoring wires on each light fixture.

And then they had cosmetic damage on others.

And I've looked at several government buildings in San Francisco, and what you find is the earthquake doesn't recognize structural or nonstructural.

The courts building at 7th and Mission is a building that the first part of the building, roughly 60 percent of the area, went through the 1906 earthquake. It was built in 1905, and then they made a big addition in 1934, and then they made another addition later, but that was a lightweight metal roof structure. This building, the hollow clay tile thought it was a shear wall in most areas, and it did act as a shear wall for a while, and then it became badly damaged. There were some infill masonry walls too that are damaged.

And I can go on and on about other buildings. I've seen quite a few unreinforced masonry buildings, and they generally live up to their reputation.

Now I'd like to talk a little bit about retrofit. I did look at five structures that were retrofitted. One of them was the Hoover House at Stanford University. The retrofit was just completed a short time ago, just a few months ago, and that had minor cracking. They spent about $3 million strengthening that structure.

It was done on a fast-track basis because the president of the university lives there, and they couldn't have him living in a motel too long, because he does have a lot of functions of meeting people and entertaining them, and so forth, in addition to his administrative duties.

Another is the Robley Hall dormitory at Stanford. The retrofit was just completed about three months ago, and that houses 600 people. It came through with flying colors.

Another is the Palo Alto Civic Center, which I had a hand in. We finished the retrofit about two years ago. It was done with the building occupied, and so it took over two and a half years to put in the strengthening measures. When I was there, I had any number of people come up, including the director of public works, and apologize for all the complaints that they had during construction, about the dust and the noise. And they said, "We're sure happy that you got this job done and that we didn't even lose a ceiling panel." So, that was kind of nice, to have a client tell you that.

I've looked at a couple other buildings, not in detail, but there's one at 4th and Howard in San Francisco that did have some retrofit. And apparently, the retrofit, while I did keep it from collapsing, there was considerable amount of damage in the building, and parts of the building have been evacuated, at least temporarily.

I also looked at the Oakland Hotel, and I understand that was retrofitted some years back, when they turned it into a retirement center. And the building stood up, and people are still living in it, but the end wall of one wing, all seven stories of it came to the ground. It's a masonry — it's a steel-frame building with masonry infill and masonry outside too, on the — cladding on the walls.

Existing structures. I looked at one building at Stanford that was completed about three months ago, the Center for Molecular and Genetic Medicine. And this is a moment frame, has a very high first story, and interesting enough, it worked pretty much the way it was designed. There was a little bit of cosmetic damage, and in a few places, the construction — or, not construction — but the contraction and expansion joints did work, and there was a little cosmetic damage around those.

Unfortunately, in some areas, they had not secured their nonstructural, like the filing cabinets and bookcases, and put catches on the cupboard doors with their glassware in the laboratories, and these flew open, and they lost a lot of glass, and things were dumped out of the files. But, again, that's something that's a housekeeping factor, as I see it. And they said that they understood that all of this was supposed to have been fixed, but apparently, it hadn't been completed. It was still on the punch list.

Another building, VISA International, the credit card people, have their headquarters in San Mateo. And about three and a half years ago, I was asked to advise them, consult with them, on what they should design for. They wanted to build their main data processing center there. And first, I said, "Well, why do you want to build 2 miles from the San Andreas Fault?," and they said, "Well, that's our headquarters."

And so, then I came up with seismic criteria for the site, and also structural design criteria for the building, and reviewed these with their engineers. He did the design, and then I provided designs and recommendations for the installation of their computer equipment. Everything went fine. Their EPS system came on immediately, because they lost power, and then their emergency generator came on within 20 seconds, and they continued to process their — all the credit card transactions.

In fact, somewhat later, their East Coast facility, which is their other data processing, went down for some reason, and they were handling worldwide in San Mateo here, after the earthquake, for several hours, though. It can be done.

Of course, we'll have to say that this wasn't the biggest earthquake that could have hit the area.

I'd like to make a few general conclusions. One of these, I think some of the speakers have alluded to, and that is public education.

Despite articles in the media saying, "This is not the big earthquake, we haven't had that big one yet," and so forth, I've talked to a lot of people in quite a few areas around here, and they feel their building or home is safe because it went through the earthquake. And so, they just say, "Well, I'm — I can relax now, you know, I've got a good structure here, and I shouldn't have any problems." That may or may not be true, because they may have some hidden damage that isn't disclosed by the visible cracking and so forth.

And another is that many people in their homes still don't understand what they should have to be prepared. I've talked to quite a few people who said, "Gee, we didn't know we should have water," and, you know, "I didn't have any batteries, and I had the hardest time going and getting batteries for my radio, because I was scared to go out, and I didn't have anything to cook on, and so I had some bread in the refrigerator, and we ate that," and that's the way things went.

I know the telephone book has a couple of pages in the front, but perhaps a TV program or something could — just spots could be put on from time to time, to make people aware of what they should do. I know I helped out some of my neighbors. They're elderly people, and they really weren't prepared, and they certainly appreciated my coming over shortly after the earthquake, and we happened to have some extra waters of bottled water and offered them to them, but they just didn't realize. Well, I guess they didn't read the phone book.

So, I think we still need a public education program.

Then we've — it's interesting looking — and I'm not a seismologist or geologist — I'm sure Lloyd Cluff can explain all this, but it's very interesting how the earthquake intensity seemed to focus north from the epicenter. San Jose was relatively unscathed. I believe this building had what, 11 percent g in one direction and

.08 in the other direction, on its instruments. Yet, if you look in Palo Alto, they had 20 percent downtown. Stanford University had 26 percent. Stanford Accelerator had 29 percent. Redwood City had 27 percent. San Francisco Airport had 33 percent.

The reason you didn't get more damage, of course, was the short duration of the strong motion. But it also seemed to follow some of the maps that have been prepared by DMG and others, and the GS, about where you're going to get the most intensity of damage. Now, I haven't had a chance to plot any of these on the maps, but just looking at it, it seems the areas that are predicted to have high damage had high accelerations. They didn't necessarily have high damage.

But my thought here is that we should study these filled-land areas or other areas that are bay mud or other potentially adverse soil response areas, and, well, come up with some help for the people. There are people who own these buildings, they aren't aware of — like, certainly, to people in the Marina — come up with some help, maybe tax incentives or some other kind of a public assistance, to make them aware of this, and then perhaps assist them in retrofitting their buildings in some way, because, if we don't, money being what it is, it won't get done, and the next earthquake will be worse.

Now, that's something I'd like to see the state come up with some kind of legislation.

And then another is what should be done with the buildings that are located on these areas? Of course, one thing you could do is tear them down and rework the subsoil down to whatever depth it has to be, and build new ones, but I don't think that would work.

And then, new facilities are being proposed on some of these areas, and I think that we should take some very special precautions there and make sure that we get detailed studies so we can be reasonably or well satisfied that what's going to happen in the next earthquake won't be as bad as it has been in this past earthquake, for new buildings.

And then, for unreinforced masonry or similar hazardous buildings, there's still a lot of those standing. San Francisco had what, 2,100, and there's maybe 80 or 100 that are damaged — I don't know — maybe 200. There's a lot of them still there. People are going to say, "I don't need to do anything, because, look, my building's fine."

One I think is a requirement to do something about this, but, on the other hand, I think we need some kind of tax assistance or public incentive, or maybe a low-cost loan or — I don't — I'm not a financial type, so these people can come up with that kind of idea — to help these people so that we can improve these buildings, because the people that are working in them probably don't realize that, that they're exposed to — well, what happened in some of the buildings.

And I'd like to say this. It's my feeling that buildings can be successfully retrofitted. I think we have to pay attention to details, and I think we have quite a bit of research yet to do on the effects of retrofitting and which are the best methods for buildings. But I think that, from what I've seen, generally retrofit seemed to work reasonably well, in fact, in many areas, very well.

And then, the last point is for structural engineers that — and architects. Be sure you connect things together, be sure you make provisions for differential deformations between the frame and the nonstructural elements. And also, be very careful on quality control.

I've looked at some buildings where the drawings indicated one type of connection, and the earthquake disclosed that it was constructed differently, and it wasn't constructed the way it should be. So, I think we — we do have requirements for quality assurance, but maybe we should make it a little bit more mandatory.

So, with that, I'll be happy to answer questions.

CHAIRMAN CLUFF: Fine. Thank you, Rol. We appreciate your observations and recommendations.

A couple of quick points. One is, you mentioned the .38 g acceleration at the VA Hospital in Menlo Park.

MR. SHARPE: No, no. At Palo Alto.

CHAIRMAN CLUFF: Was it Palo Alto? At Palo Alto. All right.

MR. SHARPE: Yes.

CHAIRMAN CLUFF: The earthquake of 1971 in San Fernando brought to our attention the vulnerability of hospitals, and particularly the VA hospitals. And I'd like to hear the success story of that seismic upgrading and how that helped that facility to come through this.

MR. SHARPE: Well, the Palo Alto hospital didn't get upgraded, as far as I know.

CHAIRMAN CLUFF: Oh, it didn't?

MR. SHARPE: I think they just let a contract recently to upgrade it, if what I — now, I may be wrong on that. I've been trying to get a hold of Dick McConnell, who's head of the Civil and Structural Division at VA, but he's been busy, and when he's called back, I've been out. But I was trying to get permission to go in and look at the building. As the local people says, "Washington says you've got to get the okay from Washington."

CHAIRMAN CLUFF: Well, we'll wait to hear that story, then.

MR. SHARPE: But there are records at a mid-height, and then at the — at the roof too, and it had 1.09 g at the roof. So, it was pretty well shaken.

CHAIRMAN CLUFF: At Stanford, you mentioned being involved in some of those evaluations of some of the facilities prior to the earthquake. Is that correct?

MR. SHARPE: Well, I wasn't directly involved. I was involved in that I'm a consultant to Stanford —

CHAIRMAN CLUFF: Yes.

MR. SHARPE: — but not directly on the design.

CHAIRMAN CLUFF: No. What I'm getting at is, I'd like you, as a professional, to give us the benefit of how you judge seismic safety.

Now, let's think of those facilities at Stanford or any other university, where we know we have some vulnerable buildings, and we have a need for classrooms, and a lot of students and so forth, there's a need for money to build new facilities, and not to spend it on the old facilities. And so, the testimony that was given here this morning by the Stanford representative, they had decided to not occupy some of those buildings, prior to the earthquake.

And I just wanted your professional judgment on how you go through and decide what's safe and what isn't safe in some of those old buildings.

MR. SHARPE: Well, that's something we haven't been able to write a manual on yet, because each building is different. Looking at the buildings, if there are drawings — in some of the old buildings, drawings are not available. Then you have to dig a little further, either cut a hole in the ceiling, if it's a plaster ceiling, or lift the ceiling, and get up and see what kind of connections are there.

If you have unreinforced masonry, if — very often it's plastered on the inside or it has sheetrock, so it's very difficult to see on the outside. They may have repointed and repainted so it doesn't show, so you have to dig into it.

And if you don't have the building tied — the walls tied to the floors and the roof, as an example, in an unreinforced masonry building, you certainly should do something about it. There's — well, I say you should. The thing is, there's a lot of factors that affect this, implementing it.

For example, Stanford has the matter of money. They did go along, and they were — and they do have a program underway of retrofitting buildings. But they have a priority basis, because they don't have the $150 million or $200 million laying on the table that they'd need to upgrade all their buildings.

I don't know what figure they gave this morning, so that's just my guess. That's not a Stanford figure.

CHAIRMAN CLUFF: Further questions? Stan?

COMMISSIONER SCOTT: Is this working?

CHAIRMAN CLUFF: Yes, it is. Yes.

COMMISSIONER SCOTT: You cut the other one off, but I'm going to talk anyway.

Roland, you mentioned the really great importance of being very careful on quality control. Just — will you say, kind of for the benefit of a lay person, how do you get that done? And if structural engineers don't inspect on their jobs, how do we get really effective quality control?

MR. SHARPE: Well, the reason structural engineers don't do a lot of detailed inspection of a job, it's normally not in the scope of work, and it's certainly not in the fee. I think Paul can attest to that, that we do have some clients, however, that you can convince that, "Look, we should have some extra money so we can go out and make more careful inspections during the construction," or you might get clients that have — will hire good inspectors. If they just hire an inspector, he may or may not be good, and I've seen some buildings that were fully inspected and the construction was really very, very poor.

Others where there was an inspection by the structural engineer, they seemed to do fairly well, or very well.

Now, how do you do this? Well, I suppose one way to do it is make it mandatory. And if so, then the structural engineer could get the money in the fee so he could provide these services. It is required now, I believe, on essential buildings, isn't it?

COMMISSIONER FRATESSA: Pretty much.

MR. SHARPE: Pretty much. And then, you know, hospitals and schools have done quite well, that is, those schools that were designed to more or less the later standards, say, since the last — say, 1970 or so.

CHAIRMAN CLUFF: And they do their inspections by a structural engineer.

MR. SHARPE: Oh, yeah.

CHAIRMAN CLUFF: Thank you. Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much, Rol.

MR. SHARPE: Thank you for inviting me.

CHAIRMAN CLUFF: The next speaker is Earl Thompson, Santa Clara County emergency services officer.

While Earl's coming up to the microphone, he is also a member of the BAREPP Advisory Board.

And so, share with us your observations and recommendations, very, very concisely.

MR. THOMPSON: Okay. I'll be as concise as I can.

I appreciate your attention. This has got to — it's going on and on and on, I know, and a lot of it becomes redundant, but I see no one nodding off, so, apparently, you're very — except perhaps one person —

(Laughter)

MR. THOMPSON: — you're very, very involved in this, no doubt, and are putting in long hours. And, of course, quite a few of us are putting in long hours.

Maybe a little bit of a history of the event, prehistory actually, or pre-event history. We did — and it was alluded to by testimony earlier, I believe — have a countywide exercise July 13th of this year. And the scenario was quite similar, except that it was based on an 8.3 on the San Andreas, not a 7.1. Therefore, the number of things changed — more dramatic, more traumatic in the scenario than actually occurred. But there were a lot of similarities as well.

And so, I felt that was very helpful to us.

In addition, on August 9th — 10th, I believe it was, when Sacramento had its exercise, I was up there representing the county. But from my perspective, that exercise was not nearly as helpful to me, but I'm sure was quite helpful to the state and federal folks, because they were the ones primarily testing, and the few county folks that were there were kind of there as like, I guess, a resource, and I felt they didn't really adequately utilize us. But I felt — so, I was more of an observer than anything else, but what I observed, obviously, is a very helpful event on that scale.

In addition, we had just, in May of this year, completed revision of our emergency plan for the county and of our operational area, the operational area in this case being the county. And that was very useful to us, and very appropriate. In fact, we tested the plan at our exercise, and found some things that needed some revision. Of course, we didn't have time to revise it before the event, but we were aware of some holes in it. And that helped us, I think, when we actually had the event.

I'll be talking about some of these things that were helpful to us that came out through the exercise and proved to be real-life.

Another program that we had developed pre-event — this actually started about four years ago, and recent — well, recently, about two years ago, I guess, was completed — is what we call our EOC-to-EOC radio network. We have a radio frequency designated just for the purpose of allowing all the various EOC's in the county, as well as the county itself, to be able to network between each other, because we anticipated telephones down, we anticipated that the frequencies that were available would be tied up with emergency services, and so we developed this system, the EOC-to-EOC radio network, and it was very, very helpful to us.

I started to talk about another system and switched to that, that being a hand-held radio system that we have within the county alone. We have 17 hand-held radios that are on a particular frequency we have. It's not a sole purpose; in fact, it's just an auxiliary purpose. But we test these monthly, and have been testing this particular system for a number of years as well, never had an occasion really to use it.

It started — it came about as a result of the Morgan Hill earthquake and an inability to communicate with the department heads and agency heads and so forth. It turned out to be quite helpful, especially to me. I happened to be on the highway, Highway 17. I usually stay in the office, 5:30, six o'clock, or later, and I would have been at the office when this happened, but because of the ballgame, I snuck out early.

Well, everybody in the world knew I snuck out early, because I had to come up on the radio out on the freeway to find out what was going on here in this building. And Susie Wilson, a supervisor, was on the hand-held radio, among others, and she very quickly advised me that what I had experienced was actually a pretty significant earthquake, and — because all I thought, I thought, like almost everybody else, I'd had a flat tire or too — a pretty severe one, but I wondered why everyone was pulling off on the freeway. I thought my driving was kind of erratic, but I didn't think it was that bad.

(Laughter)

MR. THOMPSON: So, there was an advantage, though, for me to be out on the freeway at that time, because I also had radio contact with the county communications, in which we have our EOC, emergency operations center, so I contacted them quickly and indicated that the indication I got was that we had a pretty severe earthquake, and what kind of information were they getting, you know. And they said, yes, it was, so they asked if we should set up the EOC, and I said, "Yes."

Our EOC is used for other purposes on a day-to-day basis, so they had to connect the telephones and that sort of thing. So, that happened, and because I was on the road, I was able to get there — my travel time was probably a half-hour, 35 minutes. And so, I was able to get started rather quickly.

The folks that were coming from this building to get up to the EOC, which is about the same distance, really, the travel time I had, I believe were more on the order of two, two and a half hours before they were able to get there.

So, one of the first things we did when I got there was to set up the EOC-to-EOC radio network. And I — as soon as that was established, I attempted to establish contact with all the cities. And eventually, I had either direct or indirect contact with all cities through the system. Some cases, we had a little problem with actually contacting a particular city, but we were able to get information relayed or whatever, so the system did — did function quite well.

And we continued monitoring what was happening in the cities through that network all through the night. And gradually, probably, the — the next day, a number of the cities in the county found out they didn't have many problems to speak of, and so they closed their EOC's. And so, it was a little more difficult to get updated information from them. But, by and large, those that closed their EOC's didn't have that much to tell us anyhow.

I might also mention, in discussing a little bit of the history, I was in double jeopardy, because not only was I required to go to the EOC and deal with that for a number of days, and weeks, as a matter of fact, but I live in Los Gatos.

And if I had known that was the epicenter, I think I might have been one of those who deserted their post — I'm not sure.

But I — I didn't know where the epicenter was, of course, initially, and then, as I was in the EOC and information started coming in, I became aware that the epicenter was not that far from my home, and that — it caused me a little bit of concern, especially when I found out, through the ham radios, who were lifesavers — I'm sure you know the amateur radio folks are the greatest thing in the world when it comes to an event like this — I'm only located actually about three blocks from city hall, Los Gatos City Hall, and the hams were down at City Hall. And I asked them to find out the status of my house. And when I found out that my neighbor's house was down, and that there was a significant gas leak in the street in front of my house, I got a little apprehensive.

And I have a house that sits up the hill above me too, and I was worried about it. It's about 80 years old. In fact, they retrofitted that about ten years ago, securing the house to the foundation. It turned out that worked.

But there were a lot of problems I was concerned about, and they were not able to verify — in fact, the fire department was up there because of the gas leak, so through them I was — they checked in — I was not able to verify the status of my wife, who's my family at this point, but within a short time we found out she was safe and everything, and so we were all right at that point.

But I had a firsthand feeling for what it's like to be required to be in an emergency response mode, and not know if your house is standing, if your wife's in the house standing, or what. And it's a rather uneasy feeling. But I found — I heard few, if any — I haven't heard any, personally — desertion problems that we all talk about, that people are going to desert their posts when they have an emergency responsibility because they're worried about their families.

Now, if, in fact, you know, my house had gone down, that would be different. I definitely would have — would have turned it over to someone else and gone home, but that was not the case.

So, we opened our EOC about 5:45. It was, I'd say, fully operational about 7:30. We declared a disaster. Sally Reed, the county exec, was there by 7:30, and was one of those who was trying to travel from here to there and had difficulty in travel time. We declared our local emergency about 7:50, in that neighborhood.

And in regard to our operational area of responsibilities, of course, we're not just concerned about the county, but the whole county as far as coordination of resources and activities, trying to get a feel for what's going on throughout — throughout the county, and to provide information to the public. As I said, the primary method we did that for some time was the EOC-to-EOC radio network. And that proved to be quite helpful and beneficial.

Under the operational area, our responsibility is primarily resources. We got requests from a number of cities for resources, and we, in turn, of course, then go to the state OES regional office, asking for those resources. We — the state attempted to be very responsive, and I felt were responsive to our requests.

One of the problems that I had in the EOC day in and day — because this went on for a number of weeks — as time went on, they had reliefs come in, and, you know, I'm used to working with Dave Wold in Region 2, who's a very knowledgeable person, very capable, and willing to be very helpful. I talked to Dave maybe twice for the whole time that this event was going on. The person you talk to day-to-day is usually not the person you talk to when you need help. And sometimes, I would talk to people who had no idea I was, or didn't even know who Dave Wold was, who was in that very office at that time. And things did not proceed as smoothly as I would have liked sometimes. Things would tend to fall through the cracks.

An example of that is, we had put in a request to activate the National Guard for emergency water to Redwood Estates, which is actually county responsibilities, outside Los Gatos — it's a — like our county-city. And we did that, I believe, about 10:00 a.m. in the morning. And about two or three o'clock, they walked in — a couple of the National Guard folks walked in, and I assumed, frankly, that they were already up in Redwood City (sic). Well, they said no, they were still waiting for an official mission number and all that.

So, we — we called back and trying to determine that. Well, through various difficulties in getting the message to the right person, we found out, about five or six o'clock that night, that, in fact, no mission had ever been assigned. And so, the National Guard was all ready to go. They had the water. We were led to believe that it was a very critical water shortage, which, in fact, turned out to be not as critical — people were not dying of thirst yet, but there were water distribution problems at that time.

But it was very frustrating for me, who — I was thinking that people were literally dying of thirst out there, and here I had a water source, a water capability, right here in my office, in the EOC, and I was told I couldn't use it because they're required to consider civilian sources before they go to the National Guard.

And I — I said, "Well, that's fine, that's crazy, but we need the water now, and I have the people here ready to go with their water buffalos." They listened patiently, I guess, and the person I was speaking to at this time was a very new individual — he didn't know me or Dave Wold or anyone else. And he conveyed the information. The bottom line is, when I was ready to go off shift later that night, I was informed that a civilian source had been located and was being dispatched from Stockton to come to Redwood — Redwood Estates.

I made some inappropriate comments to the person on the phone at that time, something to the effect that, "The next time they call me — the news media calls me about how our relationship is and how things are working with the state, I'll tell them how it really is," which was under the heat of battle and actually wasn't that bad, but that moment, I was not feeling very kindly about what was going on.

But they did, in fact, do that. They contacted this civilian conveyor of water, and he came from Stockton. He ended up in Santa Cruz, or Watsonville, I believe, instead of over to us, could not get through the mountains, of course, Highway 17. Eventually, by the time we got his water tanker up to Redwood Estates, it was Saturday — the next morning, not Saturday, whatever the morning was — the next morning, he eventually was in a convoy that went up to Redwood Estates.

And I had the water available all the time, and that was very frustrating to me.

So, I think perhaps the state and the federal government as well, perhaps, needs to be a little more flexible, that when you perceive — whether it's true or not, the perception is the important thing — when you perceive locally that you have a significant problem that could be life-threatening, i.e., water availability, let's bend the rules a little bit. Even though they're supposed to get a civilian source from someplace else, let's bend them a little bit and get the water that we have on hand up there.

It turned out they gave them a mission number anyhow, and they went up there also. But they were delayed, and went either at the same time that that tanker did, or a little later. I'm not sure of the timing of when they got up there.

CHAIRMAN CLUFF: Mr. Thompson, can you quickly come to the conclusion of your remarks? We've about used up the time.

MR. THOMPSON: Oh, okay.

Well, let me tell you quickly what worked, what didn't work.

CHAIRMAN CLUFF: Yep. That's why we're here.

MR. THOMPSON: Okay. Okay.

Well, police and fire worked. The mutual aid program worked very well. We provided mutual aid to Santa Cruz County, as a matter of fact, in that our county was not overwhelmed with those kind of problems. Fire had five strike teams that came — that were developed and came down here. Two of them, you know, unfortunately got to Santa Cruz instead of here, but — and I assume they were used in Santa Cruz, but the three that were here, we utilized.

Those that handled the EOC environment, there were — I'm a two-staff person, a two-staff department, and that's inadequate. We were exhausted trying to handle the acting director's position. And the county exec recognized this and made some comment on television a few days later, when we were being interviewed, that she needed to beef us up in some manner.

Communications worked well, in the sense that the phones came back a lot sooner than we had anticipated in our scenario. Of course, an 8.3 would have probably been a little different.

We had the EOC-to-EOC radio network, which worked. We had the hams; that worked.

We did not have confidence in, nor did we use the EBS. And I won't go into that unless you have — you want to ask me questions about it, but — due to time constraints, but the EBS system was not utilized in the sense that it should be.

Inspectors — I heard someone make a comment, from Los Gatos, I believe, about 100 inspectors, or someone asked a question about 100 inspectors. I was the one that asked for 100 inspectors. I had requests for inspectors. They were coming in. I had no feel initially about how — how many cities would need these inspectors. And so, I picked a random number of 100, thinking, with 15 cities, if half the cities needed a few inspectors, eventually, if I staged them at one point, then I could get these inspectors out to the various cities. And I staged them in Los Gatos because they were the first one to ask for it, and the one that seemed to have the greatest need, as well as my unincorporated area just beyond that. So, that's where the bulk of the inspectors would go.

Again, there was a communications breakdown. A few hours later, they informed me they were sending me the three inspectors I'd asked for. Well, I'd asked for 100. By that time, I said, "Well, how many can you give me?," and they said, "Well, maybe we can get 50." So, I said, "Well, send me 50." I don't know, frankly, if 50 ever arrived.

But the other side of the coin is, there were random responses from cities by inspectors, which I didn't know — I had no control, because they were not going through me. I didn't know who was getting what, and so that tended to make it a little difficult to determine how many more inspectors were needed, if any.

Medical was not adeuquately tested. The hospitals, by and large, were up and running. There was a couple problems in the county, but by and large, up and running. They only — we only had five deaths. We had 635 people who went to the hospital initially, meaning a day or — the first day or two, of which only 93 were admitted. And so, that is not going to overwhelm most hospitals. It didn't in this case.

We learned from this that we didn't really understand the role of the personnel, the personnel annex. We thought we did. We thought the Personnel Department understood it, but in trying to work with the volunteers and provide some direction and control there, we found out that the right hand didn't know what the lefthand was doing in many cases.

Supply purchasing, it was a lifesaver to really have them on hand. They've never been adequately tested in even oru exercises, and we would have been lost without having them personally represented for the duration of our EOC.

And, in closing, I would like to say that our staffing is inadequate to try and handle day-to-day, let alone this kind of event. In October, '85, when I came to work here, I had four people. July of '87, I had one person; that was me. I was cut to one person. March of '88, I was back to two people, my one assistant. September of this year, I was given a secretary back. And then, this month, I was given permission to contract with an additional assistant manager, to bring my strength back up to four, but that's supposed to go away after six months.

Well, I was begging for people when I only had four, so you can imagine how I felt when it was down to one and two, and why there are a lot of things still to be done to help us get full speed ahead.

CHAIRMAN CLUFF: Thank you very much.

Questions from commissioners?

(No response)

CHAIRMAN CLUFF: Thank you for coming before us today.

The next speaker is Larry Henderson, United Technologies.

You've been sitting back there for a while. I'll just let you go ahead and tell your story, and be as brief and concise as you can.

MR. HENDERSON: Yes. I'll do that.

Thank you very much for inviting me.

I work with the United Technologies Corporation. We're a small division of that corporation, Chemical Systems Division. We make rocket motors for the government and private industry, and some of these remarks are in that context. We're used to dealing with emergencies in our industry because of the potential release of large amounts of energy, because of accidental ignition or detonation of rocket propellants.

So, we had in place, prior to the '84 earthquake, certain plans associated with our business, but not in the context of an earthquake. So, based on the study of the '84 earthquake, we initiated some additional efforts.

Could I have the first slide, please?

(The following remarks were accompanied
by a slide presentation.)

MR. HENDERSON: We issued an evacuation plan of Coyote Center. And I can tell you that that worked flawlessly. We removed all noncritical people within an hour from the site and sent them home. We are a three-shift operation, so we did have a full crew in operation on the second shift.

In order to provide lighting for egress from our facilities, we have added emergency lighting. We had a few failures because of the units being dismounted because of the shake, but generally they worked extremely well.

We purchased mobile lighting systems, and they wer deployed within 20 minutes after the quake hit. We were at the point where it was getting dark, so we had certain critical operations that needed some additional lighting, since we had lost power from PG&E.

We had added emergency communication gear. Our maintenance people deployed that throughout the site and did make an initial survey of all the facilities.

We have established a crash cart at our fire department, and the purpose of that is for mitigation of any potential spills of hazardous chemicals. Even though we deal in an industry of high energy and potential high energy release, nevertheless, we have very chemicals that are toxic and hazardous to human life in of themselves. Only once the material is mixed does it become really quite dangerous to handle.

We did not need to deploy that.

We added emergency medical supplies. We didn't need any of that.

We have added emergency shut-down procedures to our equipment. We're somewhat unique in the valley in that we use some fairly large, sophisticated items, such as mixers that have a coast time somewhere around one minute. That is, once you remove power, the unit slows down gradually and comes to a stop. They're extremely rigid equipment, heavy steel beams, very little flexibility. So, we had no problems with any of that equipment, nor did we see any walking of equipment with any of our facilities, that is, movement on the foundations.

Finally, we've made a very concerted effort by all our employees to isolate bookcases throughout our facilities, and those were all attached to walls and to floors, so we did not have any upset bookcases, although we did lose books and files from cabinets.

The good news is, we sustained much less damage during this earthquake than in 1984. Both in the 1984 earthquake and this earthquake, we were fortunate in not having any large equipment in lifts on cranes. We did see some separation of support beams from lam beam structures. There are some modifications that are now in work in the industry, which requires only one side of a crane rail system to be secured, with the other side floating.

We did notice, in a very recently-completed facility, that we had some lightbulbs pull from lam beams. We're going now to a through-bolt structure, so that's a point of advice that we — I think that we need to look at within the industry.

We have a developing industry, and something as old as cranes, we need to look at that to be sure that we don't make a bad mistake in this earthquake zone.

Slide Two presents our only real problem. And this occurred at one of our main office buildings that houses 300 people. We did an early survey with my staff, who are basically structural and mechanical engineers associated with construction, and have combined something in the neighborhood of 200 years of experience.

So, we did a quick survey the following morning that took us about four hours, where we looked at all of our significant hazardous operation sites, and all of our office buildings. And it was determined from that cursory inspection that we had no really large problems.

When we called in a consultant architect-engineer to survey our Building 50, there were cracks noted at the point where the spandrel beams join the vertical walls. This cracking was — resulted both from the earthquake and from temperature cycling of this particular wall. So, there were 45-degree cracks coming from the point where the spandrel wall joins the vertical wall.

We removed the people after we made a management decision that we had decreased the margin of the safety in the operation of that building. We were in no hazard, but if we would sustain an equivalent earthquake, we could lose some of the spandrel walls. So, as I've said, we removed the people from that facility, and we installed 6-inch wood posts on each side of the vertical wall.

By the way, one of the aftershocks, we've seen additional cracking with the post actually being functional to brace that spandrel wall. So, that was a successful repair.

In the next two months, we'll be making cosmetic changes to that particular building and bringing it up to modern structural requirements.

In addition, we have learned some more things. Even though we've had very little damage from this earthquake, we are going to be adding an earthquake warning system, which was discussed earlier. We are going to put two systems in: one in our firehouse, which acts as a center in the event of a disaster or an incident involving our product. That will provide recording so that we can get a more definitive level of earthquake-sensing than what we get from the surrounding area.

Obviously, our site was hit with much less severity than we saw in the '84 quake. We did not have any lines breaking, water lines. I was able to get to the site within an hour of the quake, and that was, of course, the first thing I looked at. We are most concerned with fire. We did not lose any of our water system.

But, because of the nature of our beast, the fact that we have a single, central tank feeding various feed tanks within the site, what we are going to do is install a shut-off valve on the main tank, such that if we receive another shock, we will close off the supply from that central tank to the distribution tanks, and then go in and make a timely decision when that should be opened again.

By the way, that's approximately 20 percent of the volume of our water system, which is now at about 400,000 gallons. We're going to be adding an additional 200,000 gallons in the next two years, so that we can upgrade our water pressure in certain areas in our plant, as opposed to any corrective action necessary from the earthquake.

That's about all I have, unless there are some questions.

CHAIRMAN CLUFF: Thank you very much for your testimony.

Questions from the Commission?

(No response)

MR. HENDERSON: Thank you.

CHAIRMAN CLUFF: Thank you.

The next speaker is Ted Buckius, building official in San Jose.

Ted, thank you for coming at the end of a long day, and we appreciate you telling your story, but keeping it as concise and brief as possible.

MR. BUCKIUS: I can appreciate it. It is the end of a long day for you people, and I certainly do understand what you've gone through. And perhaps, fortunately for you, our city suffered such little damage that I would say, "I can contribute nothing; why don't you just go home?"

(Laughter)

MR. BUCKIUS: No, I think I do need to point out the obvious, as far as the City of San Jose.

The most important single aspect of the Loma Prieta earthquake was the horizontal force factor. In our city, ground response level was something in the order of .1. I mean, that alone says it all. Compared to other municipalities, we experienced very little of this so-called major earthquake. It certainly was not a major earthquake to the City of San Jose, and there's no — no sense in even pretending that anything of that sort occurred.

As a consequence, the damage that was suffered in the City of San Jose was primarily of a cosmetic or architectural nature. In at least 95 percent of the homes that we're looking at in response, and/or commercial buildings, we're finding that the damage is sheetrock, plaster, very minimal, mostly nonstructural.

To date, the City has tagged, if you will, red- or yellow-tagged something in the order of 25 buildings. And we presently have probably no more than 15. Of those, 5, maybe 6 at most, are red-tagged. Obviously, the severity of the earthquake was not felt here.

Now, for whatever reasons, I would hate to think that the City would become complacent and believe that that sort of thing would — could occur at the next 7.1 earthquake, especially if it occurs on the Hayward Fault or the Calaveras Fault, which probably is statistically a lot more probable an event than that which occurred on the San Andreas. I think past records even indicate that the 1906 earthquake, of a significantly higher magnitude, didn't hurt us as severely as it did elsewhere. Again, it's probably a matter of susceptibility to damage from that earthquake.

We needn't feel that we can be complacent here, even though it does make it difficult to enforce some aspects of the URM program that we'd like to see occurring for the City of San Jose.

As far as the problems associated with the earthquake, naturally, there weren't that many for us. But I did feel some problem in trying to get inspectors to do inspections that I thought should be done by other municipalities. We had calls from other agencies. We had calls from the school districts requesting that we go out and make inspections. I felt somewhat under pressure to make those inspections, since the City had adopted a policy of trying to help out where we could. Obviously, we weren't severely impacted, but we do have a considerable number of calls for earthquake-related damage inspections, and it was difficult to see our way clear to send people elsewhere.

I'm not certain exactly what happened. I do know that I talked to one of the school districts, and they had told me that the state didn't have inspection people to send out to them because they were being used elsewhere.

I did read an article in the Santa Cruz Sentinel that suggested that every building in the City of Santa Cruz was being inspected, and naturally, I was somewhat suspect of that, the general tenor of that article. I kind of thought perhaps they might have overestimated the situation, as far as the paper is concerned.

But nonetheless, a lot of resources were being used up locally in other areas that might have been necessary had there been a more severe impact on the City of San Jose. And I did wonder aloud as to whether or not we were getting a proper response from the OES to handle what could have been some major difficulties here.

Beyond that, the earthquake presented an almost academic, classroom, if you will, type of opportunity to study what we could do in the future, how we could be better trained. And needless to say, we have learned a lot and will be far better trained for the next one, which will occur, and probably in my tenure, even though I don't expect to be in the office as long as my previous building official, Frank Brown, who was there 27 years. I expect to quit before I become an old man, but that's another subject.

At any rate, I think that the major problem, as I say, was a matter of, "Where would the resources have been had we needed them?" Fortunately, we didn't, but I would like to think that they would have been available if we had called.

That's pretty much the total of it, as I see San Jose and the relationship with the earthquake. If you have questions you'd like to ask me about the URM or anything else —

CHAIRMAN CLUFF: Thank you very much. We've had a number of people talk about San Jose and so forth, so we may have exhausted our questions on San Jose.

Other —

MR. BUCKIUS: I can give you some background on the URM if you want to, but I think you've probably heard —heard a lot today.

CHAIRMAN CLUFF: Yeah.

Okay, Stan.

COMMISSIONER SCOTT: Well, I would like to ask one quick question, kind of following up on something that I think I understand, that Tom Mounts said this morning, and that was that he felt probably there would some reconsideration of the hazardous building ordinance, which I guess maybe should be good news, in that the Seismic Safety Commission staff have indicated, as I understand their comments, that the new San Jose ordinance, the seismic criteria in there, are really substantially below those in the model ordinance.

And since San Jose is such a big and important community, they seem to feel a little anguish down here that you may be setting some precedent that others might follow, and that maybe, in the light of this earthquake experience and the possibility of much stronger future shaking, some reconsideration might be in order.

And I was just wondering if you could comment on the likelihood of that and some of the considerations.

MR. BUCKIUS: Right, certainly.

As a matter of fact, we had an item on the Code Enforcement Appeals Board agenda for October 18th to consider the effects of the — our current municipal code regulations on our URM ordinance, with the idea that, yes, our force levels were considerably below where they should be, and we needed some current political body to make a decision on whether or not that was appropriate or whether something else should be considered.

A point of information: as far as our city is concerned, we have a section in the municipal code that dates from the 19 — mid-1970's, that states that a building is considered dangerous if it doesn't meet a force level of — a required force resistance of 25 percent of the 1973 Uniform Building Code.

COMMISSIONER SCOTT: 25 percent of '73?

MR. BUCKIUS: 25 percent of the 1973 Uniform Building Code resistance. Obviously, that's low. And I know that. As an engineer, I feel very uncomfortable with having to live with that sort of situation.

So, in fact, the Code Enforcement Appeals Board was going to consider that October 18th, the day after the earthquake, which got cancelled because of that prior event.

We did have that on the agenda just this morning, and I have talked to them, and we are going to develop an ad hoc committee and go through a procedure probably somewhat similar to Palo Alto.

But I think we will probably be looking at where San Francisco is going. I'm very aware of the URM requirements throughout the state, L.A.'s Division 68, now Division 88, and their RGA and so forth. And we have, as a matter of fact, rehabbed at least three URM's in San Jose up to that level, by virtue of a change in occupancy. But, obviously, we can't apply that to buildings that are not having an occupancy change.

Nonetheless, I am familiar with that ordinance, and I feel that's an appropriate level that we can use for those kind of occupancy changes, where the building code, of course, actually allows you to do even more than that. But I think that is appropriate, and I feel that's an appropriate ordinance for the City to consider.

The problem we're obviously going to face is that the owners don't see that kind of damage in their buildings, and it's very hard to educate them to the fact that that 7.1 wasn't a 7.1 to the City of San Jose. It's nonetheless very hard to overcome that kind of thinking that says, "My building is standing there and it didn't lose a brick."

And I can show you URM's that lost no brick at all during this — it's easy enough from my standpoint, because I know .1 g is nothing compared to .6, in that other municipality. But it's still very difficult to overcome the inertia of saying that seeing is believing.

It's a difficult situation. I'm — you almost wish that you might have seen some more damage so that you could point to that and say, "Hey, you've got a problem."

CHAIRMAN CLUFF: Tom, do you have some questions?

No?

Okay. Randy?

COMMISSIONER PESTOR: Obviously, you're aware the state has limited resources, and I know the city does, and the county. After a disaster, the state picks up the local government's share of the disaster assistance money.

Do you think that maybe as an incentive or a stick, either way you want to look at it, the state ought to start saying, "Okay, for those cities and counties that have weak ordinances, that if there's a disaster, the money's going to be — the priority for the money is going to go towards those cities and counties who have a strong ordinance, and those cities and counties that have a weak ordinance, even though they experienced damage, whether it's to their county- or city-owned buildings or to local buildings, that because you didn't take it seriously, we're not going to be helping you out"?

What do you think about those kinds of carrots and sticks at the state level to try to encourage local governments to recognize that there's a need to —

MR. BUCKIUS: Are you asking me as an engineer or as a public official?

COMMISSIONER PESTOR: As an engineer.

MR. BUCKIUS: Well, obviously, as an engineer, I'd like to see anything done to strengthen the kind of weak ordinances that we have here in the City of San Jose. I'm hopeful that when we go through the ad hoc committee procedure, that that sort of strong legislations, that that sort of strong model code will come into existence.

It's just that it's — it's easy to see why municipalities can encounter problems, though. We did, back in '76, when we got this 25 percent level into the code and then had a hell of a time doing anything with it, we'd wind up going to court on cases and just having it thrown out, even though we could substantiate the building couldn't meet even that level. We'd have it thrown out.

COMMISSIONER PESTOR: Because the Commission has gotten a lot of testimony saying the state should be stricter on the —

MR. BUCKIUS: I think —

COMMISSIONER PESTOR: — 25 percent program. And, you know, Senator Alquist and Dom are, you know, getting — are going to be getting a lot of pressure to make the existing law much stricter. And the whole idea behind this was to provide that flexibility for local governments, that I think that when there are some examples of things being too weak, I think really local governments ought to recognize that there is a force out there saying that because of some of these weak ordinances, we're going to have to go way out here to the other end, to the other extreme, and make it really strong.

So, there is that kind of undercurrent at all our hearings —

MR. BUCKIUS: WEll, I see that —

COMMISSIONER PESTOR: — so I just wanted to let you know that.

MR. BUCKIUS: From an engineer, see, anything you could do that could eliminate some of the political considerations that have to be dealt with would be highly well received.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes. I'd like to also comment on the one of the political considerations. Both Assemblyman Cortese and Senator Alquist represent the San Jose area, and I'm sure other members of the legislature certainly would have concerns that the City of San Jose has one set of standards, and our bosses representing this area, it does become an issue occasionally when it comes to a vote in the legislature, and we have to respond to that.

Secondly, just a couple days ago, I had a call from a mutual constituent regarding — he has a URM building in the City of San Jose. He invested about $400,000 in mainly cosmetic type activities, but was — basically, because the URM ordinance in the City of San Jose is such that it is, he had no inclination that he should do anything in terms of retrofitting it, other than what he did, cosmetic more — more on the cosmetic side.

And now he's feeling, after the earthquake, that URM's caused the deaths of upwards of nine people during this past earthquake. He feels sort of guilty that — well, and also upset — guilty in the sense that he spent all this money, and it wouldn't have cost him that much more, judging from what he had mentioned to me, that a little bit more money, he could have retrofitted his structure, gotten the thing — gone through the process of building permits, all that, at once, and then, at the same time, having this feeling that he doesn't know if he wants to have tenants in that building at this time.

MR. BUCKIUS: Well, two things, of course. The obvious are it's not a change of occupants, and we don't really have any hammer in a building like that. However, I think that any URM's that we were aware of, we tried to point out to the owners that investing money to that kind of extent in a building, without considering seismic retrofitting, might not be worthwhile in the future.

And I would assume that a project of that nature would have had a design professional that could have advised him of about the same thing. So, I'm a little —

COMMISSIONER UMEMOTO: Well, he indicated that there was no advice from the City during the permitting procedures.

MR. BUCKIUS: That might have been. I — I myself did try to make that clear wherever I was aware that a building was a URM. Admittedly, we have not been that far along in the URM procedure from where you first started in '86. It took us until the — until I started to take over as the building administrator in the City of San Jose, which was about six months ago, before we really started developing an ordinance, even.

We had done most of the identification, but we really hadn't put anything into it, because of lack of staff time or whatever. Since I've become building administrator for the City of San Jose, that's obviously been one of my focus points. I can say that it has been my objective to try to inform the owners that I were aware of that had a URM building that, if they were putting any kind of work into that at all, that they should be aware of where the state was coming from and where we were going to be going in the future, because, at that point, we hadn't had the URM ordinance in existence, as far as San Jose was concerned.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: With regard to the ad hoc committee and the URM's, just very quickly, the URM law has started more ad hoc committees than any other law that I've ever heard of. However, you should be — before your ad hoc committee takes off, there is a state structural engineers ad hoc committee that has gotten a state consensus on a URM model ordinance. And that's in its 13th draft, and it's close to conclusion. And the commentary for that has also been written.

So, you should expect that document to be on the street, I would think, in the early part of this year, this coming year. And that has been funded partly by the Seismic Safety Commission and by the Building Standards Commission. And I think — you may be aware of that, but that's maybe something your committee would want to look at right away.

MR. BUCKIUS: I've talked to Frank Lew in San Francisco to some considerable length about where he and others are going. So, I'm well aware of that.

And I'm reasonably certain that our ad hoc committee will not be very far along before that document comes out, so I think we'll have something to show them in that respect.

I am hopeful that the composition of the committee will not be something that will be too political in nature, which — which was our original problem back in 1976, when we came up with this 25 percent force level. It was far too political. I don't think the engineering profession had that much input into it at all at that point, not that there was that much information out there. But certainly, there was enough to — for us to have considerable doubts about the efficacy of 25 percent.

CHAIRMAN CLUFF: Thank you very much.

MR. BUCKIUS: You're very welcome.

CHAIRMAN CLUFF: Mr. Orval Welch is our next speaker, and he has the distinguished designation as our last participant in this important hearing. He's the manager of the San Jose Airport, and we've heard testimony from both San Francisco and Oakland Airports, and we'd like to hear how things went in San Jose.

MR. WELCH: Good afternoon. I thank you for the opportunity.

I'm the deputy director of engineering and maintenance. The manager has been vacant — or the manager position has been vacant since July, and the assistant director, tomorrow is her last day, so you're stuck with me for the afternoon.

If I were to sum up our total experience, I think the word "fortunate" would probably be the best word. Our total damage is probably going to range in the $35,000 figure. I'd like to say that was part of our design. The existing terminal building, although built in the 1960's and '70's code, is a one-story facility, essentially, that was designed for a future second-level addition. So, even though it wouldn't meet today's codes, it was much higher than a first-level building.

At the same time, we'll open a brand new facility at the end of next month. And that was designed under the current City program of an essential facility, which is 125 percent of code requirement.

Neither of those buildings sustained any real damage whatsoever — ceiling tile — all cosmetic. But, again, I think, as Mr. Buckius stated, it could have been and probably would have been a different story if the epicenter was here in San Jose.

I would have to say it was more luck than design, and I think most of the other people would pretty well agree with that.

We had two panes of glass that came out of our control tower. Unfortunately, that's 60 feet off the ground and somewhat difficult to repair, and it was more of a nuisance, though, than an actual damage — our $8,000 to $10,000 figure. Another $10,000 for a water valve that broke inside a bridge structure, that if we hadn't got the water shut off, it could have been the extra weight from the water inside the bridge to cause damage.

But other than that, we're talking ceiling tile, T-bar, primarily cosmetic, that within three to four days of clean-up, was finished.

Our biggest problem was, basically, we remained totally open. We spent about 12 to 13 minutes checking all the runways before we allowed additional aircraft to land. And because of the partial closures of San Francisco and Oakland, that left us basically the only facility open.

And I think our primary value from the earthquake was the lessons we learned from that.

I would say, number one, it fell in terms of a drill for staff, in terms of how well we participate. We found the single people pretty well stayed at work; the married, you know, wanted to get home and check on families, that type of thing. But we had more staff operating through Tuesday and Wednesday night than we do on a regular basis.

We learned a lot of things about our emergency generators in terms of — well, they all functioned, but they are designed basically for an emergency situation. We were trying to operate the airport, with San Francisco and Oakland partially closed, as though it was standard operations.

We never missed a single scheduled flight from San Jose, and picked up diversions from all over the rest of the Bay Area. Because of that, our biggest problem was where do you park these planes, and how do you get enough fuel in them quick enough to get them off the ground for a replacement plane to come in?

But as far as the runways, the actual operations for us, landing, take-off, safety factors, there was none involved at the airport. We hope the future stays the same way.

With that, I'd gladly try to answer any questions you may have.

CHAIRMAN CLUFF: Yes. How well did communication work between San Francisco and Oakland and San Jose, in terms of understanding what the demand might be on your airport?

MR. WELCH: That's really a very well set up system. The airlines control each of the flights into the airport. And therefore, everything that could not come in to San Francisco or Oakland, they have a back-up plan as far as what's called a diversion plan. They simply ask us for permission to land. We kept the tower open all night, which is not our normal operation on both — we close from midnight till six, but they stayed open on both Tuesday night and Wednesday night to accept those aircraft coming into San Jose.

CHAIRMAN CLUFF: So, there was no difficulty in you immediately knowing that both Oakland and San Francisco had some difficult problems.

MR. WELCH: No. The minute the pilots of the individual aircraft are notified they cannot land in that location, they start calling the back-up systems. We certainly did not take all of the aircraft that would like to have landed at San Jose. They were diverted throughout Northern California, Las Vegas, Reno, Los Angeles.

CHAIRMAN CLUFF: Further questions from commissioners?

Tom?

EXECUTIVE DIRECTOR TOBIN: In each of the airports, we've suffered glass damage in the towers. And is this a problem that's avoidable?

MR. WELCH: I think it's avoidable. The reason you had glass damage in the towers, or more so than the rest of the facility, is the glass panes are larger. And that's mainly to restrict or to minimize the restriction of the actual controllers looking out through the panels.

There are also tilted about 12 to 15 degrees, and again, to improve visibility. So, what you gain on a day-by-day operation created a larger liability, in my viewpoint, in an earthquake type situation.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much.

MR. WELCH: Thank you.

CHAIRMAN CLUFF: Before we adjourn, I'd like to take this opportunity to thank our staff from the Commission for doing just an absolutely outstanding job in providing the support and setting up speakers and all the logistics for these meetings. It's just been almost flawless, and we really appreciate all your help.

We know your work has just started, in terms of all of this mass of testimony that we have, and so it's going to be a lot of fun going through it.

Also, I would like to thank the participants, all of them, in the five days that we've had in these hearings. I think we've developed a wealth of information that will serve not only the needs of the Commission, but a lot of other groups, both statewide, nationwide, and internationally.

And then, lastly, I'd like to thank all of the commissioners who have stuck with this, almost all of them, throughout the entire four or five days of these hearings, and particularly the many ones that are still here today, to stick to the end. I think it's been a very worthwhile effort, and the meeting is adjourned.

(Thereupon, at 4:45 p.m., the hearing was
adjourned.)

# California Seismic Safety Commission

Loma Prieta Earthquake Public Hearing

## Sacramento

December 14, 1989
Room 444
State Capitol
Sacramento, California

**Loma Prieta Earthquake Hearing**
Sacramento
December 14, 1989

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PROCEEDINGS

CHAIRMAN CLUFF: I'm sad to have to tell everyone about the passing our dear friend and colleague, Henry J. Degenkolb. And while Henry is now gone, certainly the wealth of knowledge and understanding that he has left with us will remain and will certainly be of great value to us at the Commission.

Otherwise, of course, you know he was a former commissioner. I would like to ask us all to stand in a moment of silence in honor of Henry.

(Pause)

CHAIRMAN CLUFF: Thank you.

One other item in the Chairman's Remarks. I had the honor of being asked to attend an event in San Francisco last week, the release and signing of the book entitled Denial of Disaster. This was co-authored by one of our former commissioners, former fire chief of San Francisco, Emmet Condon.

And I meant to bring that with me, Tom. Give it back to me.

EXECUTIVE DIRECTOR TOBIN: I think it's been ripped off.

(Laughter)

CHAIRMAN CLUFF: I wanted to hold up the book to show you. It's a very nicely illustrated and well written piece of research that deserves a reading by everyone, has some wonderful stories. And, of course, the conclusions are those of the authors, but it's certainly recommended to everyone, and I was very pleased to be part of the official ceremony in that being released last week.

The next agenda item is that — oh, approval of the minutes.

Do we have a motion to approve the minutes?

COMMISSIONER FRATESSA: Mr. Chairman, I move the minutes be approved as submitted.

CHAIRMAN CLUFF: Do we have a second?

COMMISSIONER EBERLE: Second.

CHAIRMAN CLUFF: Second.

COMMISSIONER KOCKELMAN: One —

CHAIRMAN CLUFF: Questions?

COMMISSIONER KOCKELMAN: — question, on Page 10, the Good of the Meeting.

CHAIRMAN CLUFF: Uh-huh.

COMMISSIONER KOCKELMAN: In view of the university's definition of "poor" and "very poor" and the CDMG scenario on the — the "poor" will be so damaged that it'll be torn down, I wonder if the action and the motion there went for both "very poor" and "poor."

CHAIRMAN CLUFF: You're referring to the comments —

COMMISSIONER KOCKELMAN: Good of the Meeting.

CHAIRMAN CLUFF: — after "Good of the Meeting," or the actual motion?

COMMISSIONER KOCKELMAN: Yeah, the actual motion and the comments. Only "very poor" appears there. It was my understanding it was both "poor" and "very poor."

CHAIRMAN CLUFF: Well, let's see. I believe it was Paul Fratessa who made the motion.

Paul, do you — where is Paul?

COMMISSIONER FRATESSA: Right here.

CHAIRMAN CLUFF: Oh, here he is. Sorry.

COMMISSIONER FRATESSA: I, at the time, was considering only "very poor," not "poor" and "very poor."

CHAIRMAN CLUFF: So, the motion does reflect what was stated.

Do you have any further things on that?

COMMISSIONER KOCKELMAN: No.

CHAIRMAN CLUFF: Yes?

COMMISSIONER EBERLE: Mr. Chairman, on Page 9, just before we talk about the action on the education, writing a letter to the education, I had mentioned that I thought it was important to reflect in the minutes, and possibly in the motion itself — I'm not sure about that, but — the role of the county Departments of Education should somehow be reflected and included in the letter that is sent to the Department of Education.

So, if I could see that reflected in the minutes —

CHAIRMAN CLUFF: Okay.

COMMISSIONER EBERLE: — and perhaps in the letter when it's ultimately sent.

CHAIRMAN CLUFF: Okay.

Sally, do you have enough information? Okay.

Any further comments?

Yes, Randy?

COMMISSIONER PESTOR: Yes. When it's appropriate at today's meeting on that motion that Commissioner Kockelman was talking about regarding UC, can we — can we discuss that further, on whether or not that notice should be "poor" and "very poor"? I know we're talking about approval of the minutes, but I think we ought to —

EXECUTIVE DIRECTOR TOBIN: We have an agenda item on this topic.

COMMISSIONER PESTOR: Yeah. So, at that point, maybe we could talk about it further.

CHAIRMAN CLUFF: We can certainly bring that up then.

Any other further comments on the minutes?

(No response)

CHAIRMAN CLUFF: All in favor of approving the minutes, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carries.

COMMISSIONER PESTOR: Could I abstain, please, because I wasn't here at that meeting?

CHAIRMAN CLUFF: Okay.

Executive Director's Report.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, thank you.

The first item, our budget, all I want to say is that the Loma Prieta earthquake, of course, has created extraordinary expenses for the Commission, in terms of the extra Commission meetings, the hiring of a transcriber or court reporter to do transcripts, additional travel, and so forth, and over the last two months, have spent money like it's going out of style. And now it's time for us to see how much we have been spending.

We're in the process of submitting claims to see if any of that is reimbursable because of the extent of investigation we've carried out, and, I think, very, very carefully and very logically, and some of it is — but we have some unknowns in terms of our budget at this time, and as a result, I regard it as very, very tight.

And so, we're going to go into a period, I believe, where we have to do some significant belt-tightening, as well as looking at where we are in terms of our expenses.

The administration, as a way to cope with some of the costs of the earthquake, has rescinded monies that were allocated in their previous fiscal year, yet encumbered for particular projects, such as encumbered for contracts that are spent away now, but on last year's money, or of a printing that was encumbered last year, for last year's products, that hasn't been completed.

And the result is, is that we are having to revert to the budget $88,000. This $88,000 is something that we will appeal, and we might have a good chance to appeal, but that's like losing that out of the current year budget if we're then going to continue to pay for the contracts that were underway on last year's money or printing that we would have done from — out of last year's money. The printing primarily is for the "*California At Risk*" document.

We'll appeal that, but that's also a very large unknown, and in the order of our budget, that's about 10 percent, so — or less than 10 percent — but it's an important amount, and I wanted you all to know that you'll, you know, be seeing us starting to pinch pennies quite a bit more than what we already do. And it's for a good reason.

After we have a very good sense in terms of how much money we have spent on these — the special hearings and so forth, and after we know about the — our appeal to prevent the reverting of that money, we'll then be in a much better position to know where we are for the last six months of the fiscal year.

What I want to avoid is having to cope with these kinds of problems within the last two or three months of the year, rather than spreading it out over six months. I wanted you to know that in order for us to control those expenditures and to play it safe, you will see some belt-tightening out of us now.

You all have in your packets a copy of the budget, and if you do have questions, you know, please ask.

The next item, the U.S. Geological Survey and the National Science Foundation issued a joint announcement requesting proposals for research on the Loma Prieta earthquake that has had two deadlines. One deadline has passed already; the second deadline is to the National Science Foundation — I believe it's January 25th.

And if any of you or your organizations, probably, if they're interested in carrying out research, there will be funds available from the National Science Foundation. And I would encourage all of you to encourage those, yourselves or those that you work with, because it's quite important that we see good proposals going to the National Science Foundation for research that's really focused on those issues that are of high priority to the Commission.

I think it's clear that the lessons coming out of this earthquake are incredibly important for us to learn and to apply and to reduce earthquake hazards in the future. And that kind of a very applied and issue-directed, focused research is very important to us.

The Disaster Recovery and Reconstruction Act report, approximately three years ago, the County of San Bernardino sponsored legislation carried by Senator Ayala that we supported. That legislation changed the law so that local governments could set up recovery authorities like redevelopment districts. It mandated the Commission to do a report on the — for local governments on a model recovery plan, and it appropriated funds to do that report.

The bill was signed into law, giving us a deadline to January 1st, 1990, to do this, but the appropriation was deleted. Since that time, we have tried, through the budget change proposal process, to get the money to carry out — to do this report, but we've been unsuccessful so far. So, we have not been given the funds to do it, and as such, have not done that report.

We are writing Senator Ayala, the sponsor, and we will also write the legislature formally that we have not done that report and we have not done it because the money has not been provided for us to do that.

You may all remember that this is a decision that we made very consciously after the money had been deleted from the bill, that rather than trying — rather than trying to attempt it and do a bad job or hurting the other programs that we have underway, we very consciously made the decision that we could not do it until we got the money, and have been very direct with the sponsors of the legislation. And Barbara Riordan, of course, was involved in that.

We have again this year made another request for the money through the budget process, and we may or may not be successful. And Senator Ayala has, on one occasion in the past, also thought about putting the money in through the budget process, so this is not a surprise to anyone.

I'm happy to say that there is more information available on this. The City of Los Angeles has taken a lot of very bold actions in working on this concept, and developed a lot of information, and we've learned the hard way from a lot of jurisdictions that could have been helped if such a report had been done. And expertise is being developed, especially the Southern California Earthquake Preparedness Project, so that the information is there, and if we do get the money, we can work with these organizations, who I think have advanced the state of knowledge to prepare this report, and we can do a very good job. But it really depends on us having the money to do it.

Senate Concurrent Resolution 58, this is a resolution passed by the legislature two years ago. It requires ourselves and other agencies who have roles in carrying out the *California At Risk* Five-Year Hazard Reduction Program to report annually on January 1st to the legislature on the status of the initiatives that we're responsible for.

We have a draft report, but want to bring it to you in January for your approval, because we believe that it's important for us to reflect in this report the governor's budget, which will be presented between now and that time. I have reason to believe that the governor's budget will have a number of items in it that will relate to *California At Risk* initiatives. And if we were to present something on January 1st, which we could do, a week later it might well be out of date. So, it's probably best to have a good report at a subsequent date and reflect the latest information, so we will bring that to you at the January Commission meeting for your consideration and approval at that time.

Mr. Chairman, I also would like to call your attention and introduce three guests that are here with us today from Japan. There's a group of Japanese engineers and public policy people who have been in California talking with a number of organizations, and they're interested in our organization and what we've done after the earthquake.

And in our front row, we have Mr. Suzuki, who's a senior research engineer with Pipeline Engineering Laboratory, Engineering Research Center, which is located — is part of the NKK Corporation

— it's located near Tokyo, in the town of Kawasaki.

Mr. Sashida — Mr. Sashida is the Deputy Manager, Safety and Loss Control Department, for The Tokio Marine and Fire Insurance Company, in Tokyo. I'm sorry that Commissioner Waste is not here today, who's our representative from the insurance industry, because I know he'd have a lot to speak with you about.

And the third is a Mr. Ohtomo, who's a research engineer, and he's presently at Princeton doing research, but will be returning to Japan after the first of the year.

I want to welcome you and thank you for coming to our meeting.

CHAIRMAN CLUFF: Any questions on Tom's report?

(No response)

CHAIRMAN CLUFF: I might just add that with regard to his comments on the USGS research activities, that the USGS is going to be holding an important meeting later this month, on the 20th, having to do with their research and priorities that might be established, to — and the purpose of the meeting is to look at the process of establishing priorities. And we have officially been invited. I will attend — so will Commissioner Iwan and Commission Scott — to try to work with the Survey and others in establishing priorities for earthquake research.

COMMISSIONER FRATESSA: Mr. Chairman, I have an announcement, if it would be the appropriate time to make it.

CHAIRMAN CLUFF: Sure. Go ahead.

COMMISSIONER FRATESSA: I would just like to, for the record, make an announcement about a signing of an agreement that took place on December the 12th. Most of you know that there's an organization of the earthquake engineering universities in California, called CUREE, California Universities for Research in Earthquake Engineering. And on December the 12th, that organization signed an agreement with Kajima Corporation in Japan for a joint research program that is valued at $4.2 million. And this research will take place over the next three years.

And we're very pleased at this development, which provides a degree of increased cooperation with Japan at a time when there's a great deal of competition. We feel that this program will benefit both countries that are very concerned about earthquake safety. And so, we're very pleased to make this announcement.

COMMISSIONER KOCKELMAN: Mr. Chairman —

CHAIRMAN CLUFF: Go ahead.

COMMISSIONER KOCKELMAN: — I have another announcement, if this is an appropriate time.

CHAIRMAN CLUFF: Sure. Go ahead.

COMMISSIONER KOCKELMAN: The staff put this in your folders, and I'd like to invite your attention to two pages in there, 6 and 38. This is kind of a milestone by one of our federal agencies. We usually take two years to put out a report after an earthquake, for various reasons. This came out in six weeks.

But take a look for a moment at Page 6. Here's something that confirms what the Chairman has said in the last few months before each public hearing. It's Figure 5 on the lefthand side. It shows a gap where the Loma Prieta earthquake occurred. So, I put it in yellow, and I put a little red arrow in that. That moves up and fills the gap.

And the significance of that for people like me, lay people, is on the next page, Page 38, Figure 32. I put in red the cross-hatch where the Loma Prieta earthquake went off. And in yellow is the next segment that has a combined chance of 50 percent change of occurring in the next 30 years, and perhaps even higher, because we don't have the Healdsburg-Rodgers Creek Fault, the one I've got colored in green on the upper portion of the map.

So, what you see here is not a prediction, but a probability that was realized in the Loma Prieta earthquake, that only had a 25 percent chance in the next 50 years, that it went a couple of months ago. Those yellow lines I've colored in have a 50-plus percent chance, in combination of any one of them occurring in the next 30 years, perhaps even tomorrow.

Thank you, Mr. Chairman.

CHAIRMAN CLUFF: Thank you. Yes, thank you, Bill.

I'd just add to that that the National Earthquake Prediction and Evaluation Council has requested that the Working Group on Earthquake Probability, the ones that assessed these probabilities back a year or so ago, be reconvened to address — that's the blue cover that Bill has there — to address the implications of the occurrence of the Loma Prieta earthquake and whether or not this event changes any of the probabilistic assessments made on the various segments of the San Andreas or the Hayward Faults in the Bay Area.

And I'm a member of that working group, and we have met once already and will be meeting again next week. And our charge is to have a progress report available as soon as possible, and a full report as soon as it can be put together. So, probably in early part of 1990, you'll be seeing some additional information with regard to this.

COMMISSIONER McMULLEN: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER McMULLEN: If we're doing announcements, I have an announcement also.

CHAIRMAN CLUFF: Okay.

COMMISSIONER McMULLEN: The National Fire Protection Association has published their report on the emergency response and stabilization of the Loma Prieta earthquake, and I have copies with me, if any of you would like a copy, of what the NFPA stated about emergency response during the earthquake.

And additionally, I think it's important for all the Commission to know that I had an experience yesterday of touring the earthquake zone in Santa Cruz County and meeting with all the Santa Cruz County fire chiefs. And what many of us have not thought much about, maybe, in the past, in the long-term damage from the earthquake. Beyond the physical damage that occurs at the time, the economic damage that they're suffering now is a loss of tourism, a loss of business, and the whole area is extremely depressed. And I understand the governor's going to be making a tour also, in a week or two.

But it's important, I think, when we talk about $5 billion or $8 billion worth of damage, that it's probably really more realistically double that size.

Thank you.

CHAIRMAN CLUFF: Any other announcements, since we are a little ahead of schedule?

Tom, you have a couple more items?

EXECUTIVE DIRECTOR TOBIN: Yes.

CHAIRMAN CLUFF: And you might want to comment also on the economic effect.

EXECUTIVE DIRECTOR TOBIN: Yeah.

CHAIRMAN CLUFF: Yeah, good.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, thank you.

In your packets, I want to call you all — your attention to a memo that says "Confidential, Internal Use Only," that's a letter — a memo to each of your from your attorney, so it's a privileged communication. I want you to know that it was in there, so if you had a chance to peruse it a little bit, this will be the subject of the closed session that we'll have later on today.

But, to give you a little bit of warning that it's there and a chance to read it, it might help.

Mr. Chairman, the next meeting of the Commission will be held on January 11th, here in this room again. I wanted to make sure that that was clear, because we'd had a travel schedule planned prior the Loma Prieta earthquake. But we'll be back here again for January 11th, for a meeting that will begin at nine o'clock in the morning, and again go rather long. Besides the regular business meeting, we'll continue our hearing on the Loma Prieta earthquake, and I hope at time to sort of finish the final portion in terms of these kinds of hearings.

But we still have to hear from the Division of Mines and Geology and Emergency Medical Services Authority, the Department of Mental Health, the Department of Insurance, the State Architect's Office, the Office of Emergency Services, CalTrans. We're going to call on the Federal Aeronautics Administration, Energy Commission, Building Standards Commission, Metropolitan Transportation Commission, so we still have a number of very important organizations we have yet to hear from, who have some very important insights into this earthquake. And we will call them for the January meeting, but wanted to tip all of you off to that.

The next item I wanted to report on is the current status of the unreinforced masonry buildings law. As we all know, the deadline for local governments, under law, to have unreinforced masonry building inventories completed and mitigation programs in place is January 1st, 1990, a mere three weeks away. As of this time, to the best of our knowledge, we have 80 percent of the jurisdictions in Seismic Zone 4 in some state of complying with the law, and there are 20 percent — or about 21 percent, who are not, to our knowledge, carrying out inventories or underway in any way.

An important perspective is that of those jurisdictions who are underway, they contain 90 percent of the population, so if they're successful, we're going a long way towards reducing the hazards in those jurisdictions.

The number of cities with programs in place is now 40. I think this has just about doubled since — within the last six months, and so we are seeing some real action along this line. The number of jurisdictions without unreinforced masonry buildings is now at 65, so I guess the important number to me, in this case, is that we now have about 30 percent of the jurisdictions either with mitigation programs or without.

So, it's narrowing the field in terms of the jurisdictions that we have to work. We obviously need some significant progress. We don't have it at this time, because still, well over 50 percent of the population of California reside in cities that have unreinforced masonry buildings and there are no programs in place.

So, there's progress, not yet enough, but I wanted you to know at this time that we are seeing those effects.

Mr. Chairman, since the last meeting, we participated in a workshop that was hosted by the California Policy Council — or, excuse me — Seminar. The California Policy Seminar is an organization established with the University of California system whose role is to bring the expertise of the University of California campuses to bear on public policy issues. We asked them to sponsor a workshop on the question of economic impacts that Commissioner McMullen mentioned.

The meeting involved a number of professors from a number of campuses, people in public policy, people in economics and business forecasting, and some people from the outside. The workshop, we talked about what was known from the earthquake and the physical losses and speculation in terms of economic losses, and then had the researchers, who had some time to prepare for this meeting, to talk about their observations.

One of the things that was very interesting is, if you look at the Loma Prieta earthquake, which is a relatively small, rural earthquake, in spite of its devastation in areas of Santa Cruz and Watsonville, the effects on the overall Bay Area were relatively small, from a physical impact point of view. And the economists believe that although this earthquake has caused an economic fact that's measured in terms of the measures that they use, it's going to stop by the end of 1990, the first of 1991, that on the aggregate, for the entire region, the economic impacts of this earthquake will no longer be seen.

And what happens within this region is a redistribution. And though there are restaurants and businesses and retail shops in San Francisco who have suffered greatly because of not having the normal business for a period of a month, on the other hand, it's shown a windfall for restaurants and retail organizations in the East Bay, and you see this kind of redistribution.

An important thing is, though there is a redistribution on the aggregate, perhaps there aren't these gross economic impacts. They were quick to point out that we — you can't be blinded by that, because there can be some extremely important dislocations within that region that will have long-term effects, such as the loss of the business district in downtown Watsonville or in Santa Cruz, or the failure of a number of small businesses. The economic impacts are obviously disproportionate. Those people who had to go to work and had — couldn't work from their home had to suffer the extra two or four hours of commute time, of getting to wherever it is they work during the month, and continuing now because of the effects on the transportation industry.

The transportation industry in terms of trucking, for example, still doesn't have the upper portion of the Nimitz Freeway, so there's a lot of long hauls that are taking place and added costs. And these of dislocations, if you will, are being felt throughout the community.

It was also concluded, however, that the Loma Prieta earthquake is not the model for a greater urban earthquake that is more centrally located, that there's a scaling effect, that even though maybe over a period of a year or two at the outside, aid and insurance on the aggregate, the differences won't be seen.

There's a scaling effect. A much greater earthquake with much greater impact in the more urbanized area could have effects that are much, much deeper and much longer-lasting.

Also, when the — the recovery and the dislocation, you find that some industries will benefit, such as construction. And that doesn't necessarily result in a stable, long-term economy. A boom, a construction boom, does not necessarily lead to a stable economy, even though, on the aggregate, things look fine.

The group laid out a research plan, if you will, or study outline, that had four parts.

The first was to do an aggregate economic impact study. To do this, they need to have been information from those of us in sort of the vulnerability area of earthquakes, in terms of the physical damage — not just to buildings, but on those measures that affect the economic models. So, though we have scenarios that talk about the physical damage, we haven't carried that to matters like employment.

And so, those scenarios need to be extended in order for the economic models to properly evaluate them. And there needs to be sort of an interaction, because there's little known in terms of the sensitivity of the economic models and the vulnerability studies and these others.

So, this sort of an idea was laid out.

Secondly, there needs to be a study on the distributional effects. And I've talked a bit about those distributional effects within that aggregate, but it's important to look at what those effects would be. But the first step has to be taken first.

The third, recognizing that it's not really possible to accurately forecast, even without forecasting the disaster, that you don't know where it's going to happen or when it's going to happen or how deep it's going to be, the idea is that rather than to over-quantify this, you would also — you would look at your key economic sectors.

And, for example, in the Los Angeles region, you would look at the electronics industry and the military subset of that. You would look at the business services industries, key industries. In the San Francisco area, you would certainly be looking at Silicon Valley and the high-tech industries, the business services, you'd look at tourism, as key sectors of that economy and do some sectoral studies on these to see how they might be affected within the aggregate effects or the distributional effects.

And the last point is what we're obviously all about, is policy studies. Then do some focused policy studies to look at what the key policy issues are that are being raised by these kinds of studies.

So, I was very encouraged by the expertise of the people who we had at this meeting, and their interest. Their interest now is one that's self-motivated. The economists are saying, "This is something that we obviously have to learn about." It's not us knocking on the door, trying to get their interest. And so, we will continue to work with them, encourage them to go to organizations like the National Science Foundation to further their research, and certainly, we will push even more strenuously towards either receiving money in our budget to finance these kinds of studies or through legislation that's already been introduced that would provide money to finance these studies.

It was agreed by, I think, everyone present, the economists in particular, that this is a significant subject that has not been looked at, and the potential benefits for the state to understand these economic impacts and to manage them after the earthquake, in a way, can lessen the depth and length of economic impacts after a great earthquake. And the kinds of impacts that Commission McMullen mentioned to us, that go on and on and on, after the physical impacts that have been measured, are those that we perhaps can have the most control over, and we can cut the costs of earthquakes by a third or 50 percent if we know what it is we're doing.

CHAIRMAN CLUFF: Thank you very much.

We need to move ahead. The next agenda item is the Commission letter to the University of California.

And I have some new information, but I want to give a little background before I get into that.

This is a topic, of course, that this Commission has been very much interested in, in terms of the process of assessing appropriate levels of seismic safety for certain classes of buildings and what level of earthquake risk is acceptable. And just to refresh everyone's memory, I'll quickly go through some of the background. We have an action item before us.

The Commission has a well established working relationship with a number of groups that have control over large classes of earthquake-vulnerable buildings, and the University of California is one of those. And we've made some progress; it's been slow, it's been frustrating, but we've been impressed with, at the very top, President Gardner's office, he himself and others, taking a great interest in seismic safety. And individually, commissioners have been working on this, and Commissioner Bolt leads a committee on the campus to review buildings on the Berkeley campus.

You'll recall we had an excellent meeting at UCLA not too many months ago, where we heard the total University of California presentations, campus by campus. Most of those were very good presentations. They all had the same element of not having the money they needed, but some campuses were very organized and had their priorities well set.

We were disappointed in the presentation made by the Berkeley campus at that meeting. A Mr. Cross came to us, and that whole part of that presentation was certainly disappointing. And it seemed that Mr. Cross was not going in the direction that we, the Commission, would like to have seen.

Then that was reinforced in our hearing in Oakland on November the 8th, where, again, Mr. Cross was the representative that came from Berkeley to tell us about the effects of the earthquake on the Berkeley campus, what they learned and what they might do different. And again, that was very disappointing to many commissioners. It became very clear that there was a strong difference of opinion about the level of risk that is acceptable at Berkeley on some of the buildings, the ones particularly that were rated "poor" and "very poor."

And we went through an interesting discussion about how you go about assessing levels of risk, and it became very clear that Mr. Cross himself had — and implied that those working with him in authority had made the value judgment that the risk that exists at Berkeley in a number of buildings that were "very poor" was acceptable. In fact, he told us they were moving people from buildings classed as "good" into buildings that were "very poor," and we had quite an interesting discussion about that. And he mentioned that they were fully aware of that judgment and were willing to be accountable for any of the consequences that occurred.

At the next day, because of that meeting in Oakland and that part of our hearing, Commissioner Fratessa expressed concern about Mr. Cross' testimony and his way of looking at the acceptable risk question and the judgments that Mr. Cross and others had apparently made about judging those buildings as safe, and so Commissioner Fratessa felt that people occupying the buildings might not be well informed about the risks and consequences, and so has the motion that was in to be considered — in our minutes to be considered today, and a letter that might be sent to the University of California.

Now, the new information, I felt that I needed to have a further understanding about the process of assessing seismic risk at not only Berkeley, but other parts of the university system, so I called President Gardnerto find out if what Mr. Cross presented to us was accurately reflecting the policy of the university and the position that Berkeley had taken and the university itself had taken. And I learned that that was not the case. President Gardner did not agree with the assessment made. He himself said the risk at Berkeley is unacceptable, in his judgment, and that Mr. Cross had not represented the University of California, nor did he have the authority to represent the University of California.

So, he also told me that he himself and — at a meeting held a few weeks ago, he presented several steps that were being taken and had been taken to move in a much more aggressive manner toward improved seismic safety at all University of California campuses, and that they were moving much more aggressively because of the importance with regard to the Loma Prieta earthquake, and they had developed a strike force — the words he used — composed of structural engineers and life safety experts to first concentrate on the "very poor" buildings, and particularly at Berkeley, and to concentrate on the uses and occupancy of these buildings and the risks that they represent to life safety, and, in addition, the charge that the corrective improvements be done expeditiously.

Now, if you recall, the problems that they have that they expressed to us at UCLA and at other times is the lack of resources, money and human resources, to address some of these questions. They have a lot of demands to build new facilities, and it's the problem of competition of resources.

He has — President Gardner has recommended to the regents that the university borrow $50 million, not to wait for funds to come through the normal process, but to borrow $50 million immediately, to be used to quickly address the most vulnerable buildings, rather than make the corrections gradually over the next ten to fifteen years.

So, giving this new understanding, I think the letter that we need to write is not necessarily the letter that we had thought we might write, but one that would invite representatives to our next meeting to present to us more clearly the policy of the University of California and at Berkeley, in terms of what level of risks are acceptable and unacceptable, and what they're going to do about it in the immediate future to correct these problems.

And so, with this background, I'd like to then open this topic for discussion.

Commissioner Iwan?

COMMISSIONER IWAN: Mr. Chairman, based on the testimony we received on two occasions from Mr. Cross, I'm still deeply concerned about the seismic safety program in the University of California system, and I feel that our present course of action is a reasonable one to pursue.

However, in fairness to the Office of the President of the university, I feel that we should at least give that office an opportunity to respond to our concerns, and therefore, I would move that we defer action on any letter to the University of California until after the January meeting, and that we invite the Office of the President to send us an appropriate representative to discuss with us the status of their seismic safety program, what their plans are, what their policy is, regarding seismic safety, and I would so move.

COMMISSIONER BOLT: Second.

CHAIRMAN CLUFF: Moved and seconded.

Further discussion?

COMMISSIONER BOLT: Yes.

CHAIRMAN CLUFF: Bruce, go ahead.

COMMISSIONER BOLT: If I may, Mr. Chairman, I'd like to make some comments in addition to those that you have given on the situation at present.

First of all, I think I should clarify a little the statement you made about the position of the University of California at Berkeley with regard to recent problems on moving from buildings on the campus to University Hall. And I think you gave the impression, and if so, I want to correct it, that the University of California at Berkeley has responsibility for University Hall. This is not the case.

Up till very recently, University Hall belonged to the systemwide, and therefore, was the responsibility of the President's Office. It is not the responsibility, until just recently, for the University of California at Berkeley to be involved with that building at all, and therefore, it's not justified to be critical of anything that Berkeley did with regard to that building.

The situation now is, of course, that the systemwide is moving, or has moved, largely, but will make the move to other buildings, and so that University Hall would be turned over — and it's not quite clear just in what stage of the turning-over it is, as a matter of fact — to UC Berkeley.

I should also point out to you that the president established a policy some years ago, which I think all of us were comfortable with, that the responsibility for seismic questions in the university system resided, subject to his general policy, with each campus. That is to say that while the university systemwide strike force that you mentioned will be dealing with general questions, it remains, I believe, the policy of the university that the responsibility of each campus resides with that campus, and so that at UCLA and at Santa Barbara and at Berkeley and so on, the chancellors are now taking steps to develop policies for those campuses, subject to the general policy laid down by the systemwide.

As far as systemwide is concerned, you mentioned a number of steps. There are six steps that have been announced by the president: first of all, that the chancellors will review the adequacy of the earthquake and disaster plans on their respective campuses; secondly, that the effects of this Santa Cruz Mountains earthquake on UC buildings be studied.

At Berkeley, we have received already — the committee that I co-chair that's been set up by the chancellor — all the reports of the structural engineers who were called in immediately after that earthquake to examine buildings to see if they should be used or not, so that we put off until we had a chance to look at those documents and study all of them, but, for example, that is now being done, to see if that part of earthquake safety policy is properly in place. How do you decide whether buildings should be used or not after an earthquake?

Thirdly, to aggressively pursue state funding for seismic safety corrections to UC buildings — when I was chairman of the Commission, I spoke to Vice President Baker about what the Commission saw at that time, to say the least, fluctuating support for the Commission's efforts to get funds to upgrade the buildings, and it's too long a history to go into, why this support has not been consistent over the years. So, it's good to see the word "aggressive."

Next, the formation and deployment of the strike force, which you mentioned, which will give general policy to do with things such as securing — securing equipment and materials and so on throughout the campuses, and to borrow money for these purposes.

Next, to re-examine the university buildings not funded by the state and also rated as "very poor." Of course, the university has a great number of buildings, some of which, of course, are rented, and it's necessary to have policies not only for buildings that are owned, but buildings that are rented.

Next, the recommendation that $50 million be spent on the corrections of the most seismically-vulnerable university buildings. You mentioned the way that he suggested that $50 million be raised.

So, the question, then, is: what buildings should be put forward by the various campuses to enable this upgrading to be made as rapidly as possible using the $50 million and anything else that comes to hand?

At Berkeley, the chancellor has set up a special task force, and I was present of the first meeting of the task force. It has the highest-level administrators of the campus on it. And it set up three committees — I'll only mention one of them, the one which I co-chair with Provost Judson King is looking into the seismic structural safety on the campus. And that consists of persons who are very knowledgeable about building safety, including several structural engineers on the Berkeley faculty, and Commissioner Fratessa has agreed to serve on that committee.

We had a meeting, and we will be meeting rather often in the next couple of months to review the priorities which were set up following the '70 — the studies in the '70's by a number of structural engineering companies, but to determine whether those priorities are the ones that we now want to follow. We will look at both the "very poor" and the "poor" buildings.

And the question came up at the first meeting about the study carried out at the behest of the Seismic Safety Commission — and I think the Commission might want to think about this itself — some years ago — was it '85? — somewhere in there, I guess — to — which applied a certain methodology, according to certain formulas which take into account the usage of the building, the danger of people in them and so on, and the application of certain engineering factors, depending on the class of construction.

And from the first meeting — I mention this because I think it has very wide implications and goes well beyond the University of California — there were indications that these factors really need revisiting, that the sensitivity of the results to these multipliers is very great, and that needs a very — it seems to me, a new study at some depth.

At any event, this committee is going to report in several months, and at least finally by the summer, about the — about the priorities. And in the meantime, certain steps are being taken by the Facilities Management staff to look at the costs of upgrading the buildings. Obviously, one has to know what money's involved before one can put in a bid for the $50 million or any other funds that are available.

We also have a Seismic Review Committee, and I should stress that Berkeley — and I've said this before at a Commission meeting — should be given, I think, a great deal of praise, in some ways. It's all very well to have plans, but at Berkeley, we, I believe, have moved further than any other campus in setting up a system to get independent review of the new structures and of the upgrading of the structures. A number of buildings have been done. South Hall was just finished, Wheeler, and the plans have been approved.

I have here the Phase I report by Rutherford and Chakeen, on Dole and Moffett Libraries, which was always a great concern of mine, for addition and seismic improvements. The committee which — and funds are available to do this work on the two major libraries that are rated as unsatisfactory.

These reports are reviewed by the Seismic Review Committee, of which I'm the chairman, and the committee gives its opinion and recommendations to the architects and engineers as to the adequacy of the upgrades, so that a good deal of important work is being done and has been done, and, I think, really sets a standard for the other campuses when they get around to doing the same thing.

So, I didn't want you people to go away with the impression that Berkeley has not done some very important —taken some important steps towards upgrading its structures. I think that all these things are better explained in depth by someone from the university administration who's concerned about these things. This is why I support this motion.

CHAIRMAN CLUFF: Good.

Paul?

COMMISSIONER FRATESSA: I'll be brief, but since I was the maker of the motion which wants to be put off, I would basically have no argument in supporting the current motion to do that, but it's based on some additional information besides what you have at hand, and on the presumption that if things start to slack down, we're going to have to bring that back.

But particularly, I do know — and Commissioner Bolt almost said it — but there is a look at the evaluation of University Hall in particular that will bring it up into the top 10, if not one of the top buildings on the campus at Berkeley, for renovation, cost-effectiveness for renovation. That is currently what the committee is talking about, which will help it to be one of the best-funded, and I think that's encouraging.

Secondly, this week, they heard from three architect-engineering teams to actually start the plans for renovation, the seismic rehabilitation of University Hall. And so, they — comments were that the funds were available to start the design. So, that's positive.

I will comment, however, that they are still talking about occupying the building in the interim.

So, leaving those on the table, I would like to hear from the president. I would be satisfied if we waited until after that before we acted on the motion we're putting off today.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: I guess I'm pretty disappointed in what I'm hearing compared to what I heard when we were in the Bay Area after the earthquake. After our hearing in Oakland, the UC regents met, and their response was to start blaming the legislature. I called the representative for UC, their legislative representative, and I had a meeting, and Tom Tobin was there and Keith Umemoto, and it was clear that whenever they've asked for money from the legislature, they've gotten it in the budget.

They then said — they brought up this $50 million issue that we're talking about today — that's a drop in the bucket. They can ask for more, and I don't think the legislature's going to be cheap about it, because they haven't been cheap in the past.

UC has not been aggressively supporting our efforts to push a bond bill through to make these buildings safe. They've been very negligent in that. They've been pushing demands for new facilities, improving their offices, without thinking about structural improvements.

We've got 1,350 buildings on that Degenkolb list. And we can sit around and we can try to refine that, and whether something moves from Number 45 to 10, or 28 to 16, or whatever, they need to be improved. And I have not seen the effort by UC out there aggressively working with us in the legislature and the Commission to treat this seriously.

It's disgusting, and this motion is about posting. It's not about whether we're talking about risk, or whether or not something should be a different number, or whether or not $50 million is required or $150 million. We're talking about posting, whether or not students need to know whether a building's "poor" or "very poor" when they go into it.

And, you know, we're being sued because of the Cypress structure incident. And whether that's, you know, a valid claim or not, we'll be talking about that, but we have a responsibility here. The Commission's here to recommend policy for the State of California.

And the motion's been made to post these buildings. And I think students have a right to know, when they go into a building, whether it's "very poor" or "poor." If UC wants to make a judgment that they think a "poor" or "very poor" building is safe, that's fine. But if it's "poor" or "very poor," a student needs to know that.

And I'm going to vote no on the motion because if there is an earthquake in three months, and that building could have been posted and could have saved lives, I'm not going to — I would have a hard time living with that for the rest of my life.

So, I will vote no on the motion. I would hope the rest of the Commission will join me in voting no on the motion.

CHAIRMAN CLUFF: Further comments? Commissioner Kockelman?

COMMISSIONER KOCKELMAN: Well, I've been encouraged to speak, kind of play the devil's advocate, because, you know, the things that Paul and Bruce and you said, you know, those all sound very good, like the university is finally doing something.

But what Randy says is really the crux of the matter. And I didn't know those things. I didn't know that they haven't been doing their part in getting money through the legislature. I know they've remodeled a lot of buildings and didn't do anything structurally. I know they put people under Memorial Stadium. And so, I believe we ought to act now, and I don't think we should be so concerned about being fair to the regents or the chancellor.

You know, those are big men. They usually can take care of themselves pretty well. I think we should be concerned about the students and the minorities and the handicapped and the visitors and the employees over there. They're the ones that don't have a voice. And I see that as this Commission's job, and I've seen you do that in the past.

And so, I believe we ought to act now, that we've waited too long. And I've got five reasons, and I'll lay them out quickly for you.

One, the window of opportunity is closed. The acceptable level of risk is rising. You know, it's very high before these things, it goes down, you know, for a week or two, and then it's right back up again. Everyone will accept risk for somebody else. Those people on Nob Hill watch that thing down in the Marina; they're just glad it didn't happen to them.

And a lot of the state agencies and local governments and utilities are becoming defensive, and part of the reason is liability. And I don't blame them; it's quite natural. But that window of opportunity has closed, I think.

The second is the history, my second reason. And you all know this better than you. You fought these battles — this guy has the patience of a saint, over there — we've got other men over there, and, of course, they've had a lot of courage — but in '71, and San Fernando, '75, the regents adopted their first plan. Degenkolb did a report. '78 Santa Barbara earthquake. Finally, you know, still not much is happening — in '85, the faculty at UCLA — it's just as — you know, has the same problems Berkeley has — the faculty does Campus At Risk and leaks it to the press. And so, suddenly, down there at UCLA, a great university of the world, they start to do something.

And you all were terribly impressed when Young came in and testified, the only chancellor to tell you he was doing a good job.

Well, in '87, the state geologist did a scenario, and here's what he said — it's a worst-case scenario, but it's credible, and we look at the names on the cover — Steinbrugge and Davis, the governor, Randy Ward — these guys don't put their names on covers of books where it's not credible — here's what they say.

For planning purposes, the scenario — just for planning purposes, University of California in Berkeley, where some of our commissioners work and are in danger, "Half of the buildings identified as seismically 'very poor' are expected to collapse or partially collapse, and those listed as 'poor' are expected to be sufficiently damaged to be torn down."

Well, the university did kind of respond when that came out. In '88, the president issued, I think, the first order saying the chancellors were responsible. And I can never sort out who's responsible, you know, the president, the chancellors, the vice chancellors who for them, or the board of regents. It's kind of a nebulous group. Sometimes there's kind of a lot of shadows in there — and we can get into that later if you want.

But this little book says 1,500 to 4,500 dead, and 4,500 to 13,000 injured — worst-case scenario. But it's not the worst case. It's a 7.5 on the Hayward. It could be an 8 on the San Francisco.

In August of '88, a senior structural engineer from Lawrence Berkeley, he stands before the Ninth World Earthquake Conference in Tokyo, and he says, "Half of the high-occupancy state buildings are on university property," in the whole state, penitentiaries, hospitals, you know, courthouses — half of them are on the university campuses. Board of regents, president — these are the guys responsible for the whole system.

In September of 1988, this Commission sent a beautiful letter, written by the staff, to David Pierpoint Gardner, asking him to come before you and testify — a nice letter. It says in there we think the university's moving too slowly, and, "We believe your presence and testimony will help us address the" — well, he didn't come, and only one chancellor came. And the vice chancellor for Berkeley, that has the largest hazard — you heard him — he was kind of cavalier. The chairman down —

COMMISSIONER BOLT: He's not the vice chancellor.

COMMISSIONER KOCKELMAN: He is carried on our invitation, our list, in our minutes, as vice chancellor.

COMMISSIONER BOLT: No, no, he's not a true — he's not a true — Cross is not a vice chancellor.

COMMISSIONER KOCKELMAN: Well, this is how he's carried.

COMMISSIONER BOLT: Well, he's head of Facilities Management.

COMMISSIONER KOCKELMAN: Yeah. When asked in Oakland if he spoke, you know, for the chancellor, he either didn't answer or he led us to believe he spoke for the chancellor.

Well, the point was, he was cavalier. Some of down at UCLA got kind of, you know, irritated. The chairman got visibly irritated. The same thing happened again in Oakland. And one of the faculty over in Berkeley who knows this man very well, he got kind of irritated.

Well, if something happens over there like a disaster, this guy's testimony is going to look kind of reprehensible.

Well, I'm not going to belabor that much more. Let me go on.

I — the guys who have written these books on probability and the letters and who spoke before the World Congress in Tokyo, these are people like Degenkolb, Wylie, Steinbrugge, Lagorio, Davis, Clarence Allen, Tobin, Cluff, Carrisi — these are guys who all have something as common, as far as I'm concerned. They're knowledgeable, perceptive, and courageous, and I've followed their work for years, and I admire them, and I think what they say in these things is true, and I'm, for one — I don't want to second-guess those guys. I'm not a technical man like them, but they have the courage to publish this stuff and they know what they're talking about.

Now, let me give you just a personal comment. I've got kids throughout the entire system, or had kids there. I've got them in Davis, in Santa Cruz, in Berkeley, in Cal Poly in San Luis Obispo. So, I write a letter to Heyman — I could see at the last meeting, before Paul Fratessa made the motion that he made, that this thing wasn't going to move very quickly — this was before he made the motion.

So, I wrote a letter, on my own time, my own money, my own stamp, and I sent it to Heyman. There was no response. I can't even get in the building to see him. It's got four doors. The doorknobs are off, the guards stand at one door, and the students can't get in to see him. They leave messages at the door.

So, I sent a copy to all the board of regents membership, and I'm incredulous — when I get the list, there's thousands of guys on the board of regents — it cost me $75 in postage!

(Laughter)

COMMISSIONER KOCKELMAN: I get one response, and I think this would be of interest to you, because it's a new man. It's on their stationery — amazing! The guy's a new guy, and he puts it on the regents' stationery, his own personal stationery — and I highlighted it for you so you can see it quickly, what he's saying.

Now, remember, I'm looking at this from the standpoint of a parent, you know, not a man employed by the university or a federal official or something like that. The only guy that responds — you know, well reasoned, honest, you know, sincere letter by a parent who's putting kids through that school system — and he says, "Your concern is warranted." He says, "Everybody is as concerned as you are." Then he says, "The precautions which you've outlined," he says, "have already been implemented."

Well, if you remember that letter that I sent you, all I said is, "I don't expect you guys to close the buildings, cement them, or tear them down; please sign" — well, this man is, you know, a good, decent, and kind-hearted guy, but he's either misinformed or uninformed. Those buildings haven't been signed.

Well, last of all, number five. This Commission — and I've watched, observed it for many years — it's got a special role and a special reputation and a history of leadership. It also has high visibility, with the media and the legislature. It also has held public hearings, earthquake damage after each earthquake — this is kind of special knowledge.

The commissioners are very knowledgeable. We're not going to be able to say we're not aware of the university system. We've got the largest staff we've ever had, it's the most diverse-skilled — it's a beautiful staff. And previous commissioners have queried at length state hospitals, state penitentiaries, and the private school system. And I used to sit out there and watch that. I was always so sure, you know, that this was really the right way to go about it. But, man, they have a great deal of confidence and leadership, and sometimes they just, you know, beat on these guys, hauled them in, month after month.

Well, I don't think we can do anything less on the university system. I know it's big, it's powerful, and it's all over the state, and, you know, with a lot of wonderful guys on the board of regents. But I don't think that we should shy back from that.

And we're not asking them to close the buildings or even spend any money. We're only asking them to sign the buildings. And I didn't even make that motion, you know. I voted for it, unanimously, like the rest of you.

And the last thing is, we may incur some kind of liability. We're already named in a claim. And I wouldn't want to see this Commission not — it's gone so far in the past, I wouldn't want to see it at this time kind of back away.

And the last thing is, I think you've got to — each of us have got to examine our motives and our votes and our conflicts. If we were voting to send this letter to PG&E, I think the Chairman would abstain. If it was going to USGS, I would abstain. If we were going to beat on San Diego, Dan Eberle would abstain. I think we're beating on the university system. I think university employees and faculty and those serving on special committees ought to abstain.

That's all I have. Thank you.

CHAIRMAN CLUFF: Commissioner Scott?

COMMISSIONER SCOTT: Let me just make a couple of comments here. I — we heard a good deal of history from Randy Pestor and from Bill Kockelman, and basically, I agree with that history. I mean, their — their description, I think — one might argue with some of the details — but their description, the main thrust, is basically accurate. That's the first point.

The second point is that President Gardner of the university system has basically said, "We're going to do better." It sounds to me like he means it. At this point, I'm willing to take it on good faith that he does. But I'd like to see early and periodic verification, so that in no way could this Commission be seen as backing away from a very, very important issue.

That basically is my position. I think that we should not back away from it. I really think that we'll accomplish more by not sending this projected or proposed communication at this point, but letting the university system, statewide and on the campuses, be aware that we're going to be watching, and we're going to be asking for early and periodic reporting that gets down to some of the things that are sometimes called nitty-gritty, because I think that it has to be done.

There are a whole bunch of new issues coming up. There are new campuses being talked about, and all of those good things. And I think if they want to make progress on new campuses, they'd better show some real evidence of having made progress on the old campuses.

So, that's sort of where I come down.

In terms of the alleged or possible conflict of interest, I will acknowledge that I have worked in the University of California system on the University of California at Berkeley campus for 42 years.

I still work there. I, technically speaking, will cease working there at the end of this month, because I retire — my retirement takes effect. I will still be quartered there, in Moses Hall, where my institute is quartered. But, actually, I had no chance — opportunity to consult legal counsel, but in no way am I backing away from this issue. I will certainly vote on this motion.

End of comment.

CHAIRMAN CLUFF: Will?

COMMISSIONER PEAK: Very quickly, we're a little bit hampered in what we're doing. We're talking about a letter which none of us have seen. And maybe it was a very strong letter, and maybe it shouldn't be sent, but at the same time, in the — as it was drafted — but at the same time, I disagree with Stan a little bit, in that we can, I think, send a letter, maybe a mild letter, and I think it can help to — I don't see where it's going to cause any trouble if we send a letter just doing what we said, urging them to post the buildings that are rated "very poor." In fact, I think it might reinforce our position to talk to these people in January. We'd be in a better position to have this letter than not to have it there.

And for that reason, I'm going to vote no on the present motion.

CHAIRMAN CLUFF: Further comments? Yes, Dan?

COMMISSIONER EBERLE: Originally I was inclined to support the motion, but listening to the various commissioner speak and thinking about it, and what we're talking about is advising the students, but I'm also concerned what this letter, if we sent it out right now, might do to the offer to come and speak before us and present what their plans and future ideas for dealing with the problems are.

I think we should go ahead and prepare the letter and draft it up, and maybe to hold it until after that meeting to send it out. It might be a bit of a compromise position here, but if it's to hold the letter and not to do anything until after that, I'm prepared to support that.

I think we ought to go ahead, and if it's a question of holding it or sending it out today, I'd be inclined to send it out and get it on record that — what we feel about notifying the students and the employees that work in those buildings whether those buildings are safe or not.

CHAIRMAN CLUFF: Let me try to summarize where I think we are.

I think what we're talking about is an issue of the style in which we communicate to various groups who are responsible for seismic improvement. We all are outraged at times at various behavior. I think we were misled by Mr. Cross, unfortunately, not that there weren't — isn't a lack of action on some parts of the university campus, but as Professor Bolt, Commissioner Bolt presented, the information that I've had, we've got additional information that shows that there is some strong leadership that's trying to make some movement. They're using this as an opportunity, and so I'm not one to vote for violent revolution against some of these people. We're trying to get their cooperation.

I think we should show strong leadership, and I think the motion demonstrates that, and I would urge the commissioners to support the motion.

COMMISSIONER PESTOR: Can the secretary repeat the motion, please?

MS. CARDENAS: I have part of it. I didn't get the whole thing down. It's that Iwan moved for action on the letter itself after January's meeting —

COMMISSIONER IWAN: After the January meeting, right.

MS. CARDENAS: — and ---

COMMISSIONER BOLT: Point of order, Mr. Chairman.

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: We're talking about a letter. There is no letter, is there? I have not seen it.

CHAIRMAN CLUFF: There's a letter in preparation, which I chose as Chairman, with the support of the Executive Committee, to defer until we had talked about this here at the meeting, to see what the feeling of the commissioners were.

COMMISSIONER BOLT: You see my point, though, Mr. Chairman. It's difficult to vote about sending a letter when — you have seen it, but I —

COMMISSIONER IWAN: I believe the motion was — I believe the motion was worded in such a way that's not a problem. At the last meeting, we moved to send a letter —

COMMISSIONER BOLT: Yes.

COMMISSIONER IWAN: — requesting posting. I'm merely requesting in the motion to defer action on any letter, the letter that was described at the last meeting.

COMMISSIONER BOLT: This is what I would second, then.

CHAIRMAN CLUFF: Okay. That's right.

COMMISSIONER IWAN: And I would just add, if I may, that I don't want, in any sense, for the Commission to let up. And I think most of you — I have been very vocal in this whole situation myself, and I think I would be the first, unless I was beat to the punch, to move at our next meeting that we do send such a letter if we don't hear something satisfactory from the representative sent.

In fact, I would also request — I don't know if you want to make it part f the motion — that the university president be sent a copy of the minutes of this portion of this meeting before that meeting, so that he can hear and read the concerns that have been expressed in this meeting, because I think they've been very important concerns, very valid concerns.

I just feel, though, as a strategy, it's best for us as a Commission to at least pursue this as the first step in the strategy. If it doesn't work, then I'll be the one that will move again for the letter or something stronger.

CHAIRMAN CLUFF: Yes, Paul?

COMMISSIONER FRATESSA: You've repeated the motion that you're deferring till after the January meeting. I would be concerned that if we weren't --- we didn't find responsiveness in January, that we take action in January.

COMMISSIONER IWAN: Then I would amend the motion to — or change it, with the consent of the seconder, to be till after we have received testimony from the President's Office. It could be at the January meeting that we would take action.

COMMISSIONER FRATESSA: My concern here — I agree with Randy completely that not to get this thing moving — I would much rather see the university voluntarily say, "You don't have to send us a letter; we heard your message," without having to pass letters around. And my understanding is that the president is aware of the content of — in your discussions of what this Commission is driving at.

I'm expecting in January to hear that he is aware of it, or the concerns of this Commission, and I would expect that we hear what he's going to do about it. Now, that would be the basis on which this Commission is working, and I would be in favor of putting off action by this Commission in sending the letter to January. If January's not responsive, I'm going to ask that we vote on that letter.

CHAIRMAN CLUFF: Yes. I want to reiterate that President Gardner was shocked to hear some of the things I told him that was in — came from our hearing. There was disbelief, and he reiterated that Cross did not have the authority to speak and to make the judgment that he made, and that he would like the opportunity to provide this Commission with the information and the steps that Commissioner Bolt and I have both referenced, with additional actions that they plan to take to immediately move on this.

And I thought it was — even though I agree, $50 million is nowhere near enough, that — I think the manner in which they are trying to get that funding in terms of getting some immediate loans, I think, tells us something. And it's moving in the right direction.

COMMISSIONER FRATESSA: If I may, so that it's very clear, I would expect to hear in January on their reaction to the concept of posting, period. If that's not forthcoming, then I'm going to want to see the letter.

CHAIRMAN CLUFF: Yes, fine.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes, Commissioner Bolt?

COMMISSIONER BOLT: Just on a couple of points.

Commissioner Kockelman referred to the question of conflict of interest. I can't accept his position on that. I recall that I was responsible for suggesting that the meeting be held in Los Angeles, inviting the chancellors of the university and the president to attend, that really focused the public interest on the Commission's role in this matter. So, I don't believe I'm second to anybody sitting around here about the concerns of seismic safety at the University of California.

I am concerned, however, that in the emotion of the moment, that we have a letter which really addresses a very — to me, a small aspect of the problem. Sure, you can put up posters around buildings. What I'm concerned about is trying to get these buildings brought up to appropriate levels of seismic safety. There are, of course, conflicts between the benefits to people from education, from research, and so on, and personal safety. Adults make up their minds whether they go past notices or not. It isn't a very simple question. It seems simple to put notices up.

I want to look beyond the notices to what I would urge is — if there is going to be a letter, that we have an opportunity to write this letter in a way that goes beyond the posting of notices, so that the Commission can try to help the university by various pressures, in the legislature and so on, to do more than posting.

I want to see more than posting. I want to see, before I retire in ten or fifteen years, that there are no "very poor" and "poor" buildings on the University of California campuses. I don't see that they are posted; I want to see them gone.

That's why I think our best policy now — and I put it to all the commissioners — is to think this through very clearly and not be carried away by the ease of doing something which might get in the way of pressure, continued pressure on the people involved.

Thank you.

COMMISSIONER SCOTT: That's a very valuable comment he made, I think.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: I know we want to get on, but as — and Tom will, I'm sure — because he was in the meeting when I was with UC about three weeks ago after they were blaming the legislature — I told them I wanted to get beyond this and start being positive. I know they blasted the legislature, but that — rather than having my boss, Assemblyman Cortese, get on the press and say, "The regents better not blame the legislature for this," let's be positive. Let's try and get them to support our bond bill.

But instead, they turn around and do this. And so, I — this Commission has been pushing UC on this for years. And a lot of it is due to you, Mr. Bolt, so, of course, I want those buildings to be reinforced. But I think, at a minimum, an absolute minimum, they need to be posted. Just because I want them posted doesn't mean I don't think they should be strengthened. I think every commissioner here knows that I think they should be strengthened.

But we've been doing this for a long time, and so they aren't acting, so let's at least get them posted.

CHAIRMAN CLUFF: Well, let me just say that I intend to write a letter to President Gardner expressing what took place at this. And if we could have minutes of the discussions, I will include that. And I look at this as a more positive way of handling the situation, and I would invite him personally, if his schedule allows, to come to our next meeting with his newly appointed people who are managing this for the entire university system.

So, I don't think in any way this action, taking a positive vote on this action, is backing away. In my view, this is a much more powerful or positive way to do it, and we always have the option, if what we've been told doesn't come about, then we can take further action that might even be more severe than just posting. Posting I — we need to follow on that.

I think it's premature to send a letter dealing with the posting right now, given the new information that we have and the stated enthusiasm and aggression that the university president has stated that he intends to take.

COMMISSIONER KOCKELMAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes?

COMMISSIONER KOCKELMAN: I am not sure even the letter will have much effect on them. I sent a letter just to the chancellor and just asked him to sign the buildings, because I knew it was too expensive for them to do them, but I asked him to sign them by Christmas. Well, I got no answer and only one of the board of regents members answered.

So, I don't think that's the issue. I think, after fifteen years — that's when they adopted their first seismic safety plan — for them to come back now and say they're interested in seismic safety, I think that's a long time. And even if they are interested now, and even if they request money — and Randy says they have, in the past — and even if the law passes both houses and the governor signs and the money's appropriated, and it's actually spent on safety, and not on new buildings, it's going to go out for bids. There will never be enough money.

I don't think we ought to wait. I think they ought to sign now. And I don't think anyone's going to be embarrassed. Gardner didn't build those buildings. He's only been in four years. He's not going to be embarrassed by Berkeley not having signed those buildings. And what little I know about Chancellor Heyman, he's not going to be embarrassed by that. That stuff goes on at that campus all the time. You can't walk through it without a thousand notices there.

CHAIRMAN CLUFF: I'd like to ask the secretary to read the motion, and then I'm going to call for the question.

MS. CARDENAS: The motion was, defer action on any letter to the UC until the January meeting, and that we ask the President's Office to send an appropriate individual to the January meeting of the Commission to inform us of the status of the UC seismic safety program, their policies and plans.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes?

COMMISSIONER BOLT: Really, to the mover of the motion, it says "a representative" of the President's Office. Would it not be better to say "the president or his representative"? As it sounds, it sounds as though we'd be content with having someone quite down in the hierarchy —

COMMISSIONER IWAN: I'd be —

COMMISSIONER BOLT: — but I think you probably intend to go right to the president.

COMMISSIONER IWAN: I'd be very happy to change the motion to read "the president or his representative."

CHAIRMAN CLUFF: The seconder, I presume, agrees with that. Okay.

Okay. I'd like to have the roll call on the vote for the motion.

Oh, excuse me. Tom?

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, just to respond to Commissioner Eberle, who asked that work proceed on the letter, a letter has been drafted by the staff. It's virtually done, in order to be brought to the Commission, so, yes, we can have that done.

MS. CARDENAS: Ready?

CHAIRMAN CLUFF: Yes.

MS. CARDENAS: Chairman Cluff.

CHAIRMAN CLUFF: Aye.

MS. CARDENAS: Vice Chairman Riordan.

(No response)

MS. CARDENAS: Commissioner Bernson.

(No response)

MS. CARDENAS: Commissioner Bolt.

COMMISSIONER BOLT: Aye.

MS. CARDENAS: Commissioner Crandall.

(No response)

MS. CARDENAS: Commissioner Eberle.

COMMISSIONER EBERLE: No.

MS. CARDENAS: Commissioner Fratessa.

COMMISSIONER FRATESSA: Aye.

MS. CARDENAS: Commissioner Iwan.

COMMISSIONER IWAN: Aye.

MS. CARDENAS: Commissioner Kockelman.

COMMISSIONER KOCKELMAN: Nay.

MS. CARDENAS: Commissioner McCarthy.

(No response)

MS. CARDENAS: Commissioner McMullen.

COMMISSIONER McMULLEN: Aye.

MS. CARDENAS: Commissioner Peak.

COMMISSIONER PEAK: No.

MS. CARDENAS: Commissioner Pestor.

COMMISSIONER PESTOR: No.

MS. CARDENAS: Commissioner Scott.

COMMISSIONER SCOTT: Aye.

MS. CARDENAS: Commissioner Snyder.

COMMISSIONER SNYDER: No.

MS. CARDENAS: Commissioner Umemoto.

(No response)

MS. CARDENAS: Commissioner Waste.

(No response)

CHAIRMAN CLUFF: The vote is passed, 6-5. Motion carried.

COMMISSIONER KOCKELMAN: Point of order, Mr. Chairman.

CHAIRMAN CLUFF: Yes.

COMMISSIONER KOCKELMAN: The minutes show, at least, that I voted against the motion?

CHAIRMAN CLUFF: The roll call will clearly reflect the vote of every commissioner.

COMMISSIONER KOCKELMAN: Okay. Thank you.

CHAIRMAN CLUFF: That's why I asked for the roll call vote.

COMMISSIONER KOCKELMAN: Okay.

CHAIRMAN CLUFF: Next agenda item.

We're a little bit behind schedule, but I think that was a very worthwhile discussion, and certainly not only sends a message to one segment of seismic safety where we need improvement, but I would hope that would be looked upon by others who have to deal with this, because there are many other areas that we still have a lot of progress to make.

Legislation is the next agenda item. Given the bulk of legislative activities and so forth that we have before us, I'd like to talk a little for a moment before you give your summary of this.

We have a number of bills that are coming up, and there are more in the mill, as I understand it, a total of 54 on seismic safety. And so, I think the summary that Commissioner Peak and the staff put together for us every month is a very useful and very well thought-out mechanism to inform us.

And what I'd like to do is not go through each one of these, but just a quick conceptual summary, to ask the commissioners to independently, if they have an interest in finding out more about these, to do that on their own, rather than to spend a great deal of time at the Commission meetings. And we'll spend the time on specific legislative activities where it's clearly warranted, but we can't devote as much time as we used to devote on some of these activities.

So, could you kind of follow that, Will?

COMMISSIONER PEAK: Very much so. I was going to make those same comments. You're going to have to have a lot more faith in the staff this year. They're going to get a lot — and the Legislative Committee is a sort of a go-between between the commissioners and the staff — you're going to have to work with us on legislation, with a great deal less detail. You won't be getting copies of the bills and so forth that you've gotten in previous years. There are just going to be too many of them.

We have — at the special session, there were 97 bills introduced. Left over are 73, which still could come back in January. So, we already have 73 bills on earthquake matters before the session starts. The first couple of months, we may get a hundred more.

We'll be sponsoring a great number of more bills than we have in the past, possibly as many as — anywhere from 20 to 30 bills, as opposed to the 6 that we sponsored last year.

A couple of things I'd like to point out. In general matters, there has been a Select Committee on Earthquakes formed in the Assembly. Assemblyman Reyes is chairman; Cortese, Costa, Hansen, and Hill are on that committee. Whether that's going to be any help in expediting earthquake bills or not remains to be seen, but, anyway, I just wanted to let you know it has happened, to show the import that the legislature is putting on earthquakes and earthquake bills this year.

The Legislative Committee met on Tuesday and discussed and came up with the handout that you have today. I would like to go over — note that you have two items. You have some material that was sent to you in the mail-out, and this includes a list of bills and measures that — a memorandum from Tom Tobin dated December 1st, and list of bills and measures that were approved in concept in the October meeting, before the earthquake. If you'll kind of hang onto that list, I have a motion in relation to it, in just a moment.

The — oh, I also should mention, you have a — this is an incidental matter, but you have a copy of the legislative report — the Legislative Committee report for the last year is also in your mail-out.

There are copies of — let's see — there are copies of bills on this list also. In fact, they're on the — well, they're on the new list. I myself get confused, there's so much paperwork here. They're on the new list for today. And one of those, we're going to have to change our position on.

There are some pieces of potential federal legislation which are noted in that mail-out, and those are just for your information, more or less, four items, I believe, of federal legislation. Those will be monitored. Those are items which the staff will closely monitor as they progress, and possibly advise on as needed.

There are, on this list, then, that I just mentioned to you, the bills which were discussed at the October meeting. Many of them have numbers and have actually been introduced during the special session. Others we don't have authors on yet, or numbers. They are proposals that will be introduced in the future. There are a total of 15 of these on the first — to the top of the fourth page of this memorandum of December 1st.

I'd like to move at this time that the Commission agree to sponsor these 15 measures, even though some of them are sort of a blank check right at the moment, for the coming legislative year.

COMMISSIONER SCOTT: Second.

CHAIRMAN CLUFF: Moved and seconded. Is there discussion?

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes. Commissioner Bolt.

COMMISSIONER BOLT: I would like to compliment very much Commissioner Peak for his great interest in this matter of legislation, Mr. Chairman. It seems to me that this is one of the most integrative, time-consuming parts of the Commission's work, to keep track of these bills. Staff are allocated to do this, but as a commissioner, over many years, I've found it very difficult to have the time to follow up on these house bills.

And when this committee was put into place, I had no idea that so much work would be involved for the chairman and for the other members, the other two members here, which, of course, are related to the legislature and deeply involved in the legislature anyway. But this report that he has given us here in the document, I think, is a very useful summary, and I did want to take the chance to compliment him, and I do hope that we can continue such an effort.

COMMISSIONER IWAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: A point of clarification. I believe your motion made reference to 15 bills.

COMMISSIONER PEAK: Right.

COMMISSIONER IWAN: I can't count 15 bills. Maybe it's my counting problem, but to which bills are you specifically referring?

COMMISSIONER PEAK: Do you have the memorandum of December 1st?

COMMISSIONER IWAN: Yes.

COMMISSIONER PEAK: If we can flip through those quickly, AB 12x —

COMMISSIONER IWAN: One.

COMMISSIONER PEAK: — AB 15x —

COMMISSIONER IWAN: Two.

COMMISSIONER PEAK: — Unknown-Costa —

COMMISSIONER IWAN: Three.

COMMISSIONER PEAK: — SB 5x —

COMMISSIONER IWAN: Four.

COMMISSIONER PEAK: — SB 1250 —

COMMISSIONER IWAN: Five.

COMMISSIONER PEAK: — SB 20x —

COMMISSIONER IWAN: Six.

COMMISSIONER PEAK: — 51x —

COMMISSIONER IWAN: Seven.

COMMISSIONER PEAK: — Unknown-Cortese —

COMMISSIONER IWAN: Eight.

COMMISSIONER PEAK: — Unknown-Unknown — there's one, two, three of those.

Unknown-Rogers, another two unknown-unknowns at the bottom, and finally, on the top of Page 4, an unknown-unknown again, an amendment to Prop 13(a).

COMMISSIONER IWAN: I must have a different version than you have. Mine, for example, on Page 4, has four bills, and on Page 3 —

COMMISSIONER PEAK: Those are federal legislation. But right at the top, there's one —

COMMISSIONER FRATESSA: There's nothing on Page 4.

COMMISSIONER IWAN: I don't have an Unknown-Rogers on Page 3.

COMMISSIONER FRATESSA: I don't have any unknown-Rogers either.

COMMISSIONER PEAK: Well, somebody — somebody must have changed it.

COMMISSIONER IWAN: The word processor changed —

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, the one on Page 3, under "State Legislation," that says "Unknown-Unknown, amendment to Proposition 13(a)," is the one that is the idea that Senator Rogers had introduced last year, taken out of his bill, so I think that's the one that would have his name on it. It's a constitutional amendment.

COMMISSIONER PEAK: Well —

COMMISSIONER FRATESSA: I don't have the top of Page 4.

COMMISSIONER PEAK: You don't have anything on the top of Page 4? All right. I'll rescind that to 14, I guess, bills.

COMMISSIONER IWAN: To what?

COMMISSIONER PEAK: Do you have 14, then?

COMMISSIONER IWAN: 13, was it, or 14?

COMMISSIONER PEAK: 14, up to the top of Page 4. I seem to have gotten a different version.

COMMISSIONER IWAN: 13. I've got 13.

COMMISSIONER PEAK: Okay. We'll go with the 13, then.

The motion is amended to say 13 bills.

COMMISSIONER SCOTT: I'll second.

CHAIRMAN CLUFF: Okay.

COMMISSIONER IWAN: And we are asked to sponsor these? That was the motion?

COMMISSIONER PEAK: These are sponsorships, yes.

Many of them —

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, I think there are bills on this list that, without being able to tell you exactly which ones, I know that we're not going to have time to sponsor. I mean, when you sponsor legislation, it takes a heck of a lot of work.

There's one on here — I can give you a specific example, if you turn to it — the one on restructuring the dam mitigation program, this was a bill that used — said that we should start working on these. I think you already approved the concept; you certainly directed us to work on this in September and October, and it's one that we've thought through very carefully that involves at least two other agencies. And to do this really requires the concurrence of these other two agencies. Otherwise, we're not going to get very far.

And whether or not we could sponsor this legislation is going to depend, as to whether or not those agencies have the time and wherewithal to take the lead in order to draft the language and work out the agreements that would make the program work. Given the amount of workload that we have, this is one that we would not be able to take on unless these other agencies actively get involved in it and pursue it.

So, what — there are a couple of other examples like this, the Education Task Force, Hospital Seismic Safety Act amendments, and what's important to us is to know whether or not you concur with these ideas. And we will work towards them if the other agencies are taking the lead. And if it's necessary for us to seek a sponsor, we can, but it's work that we will not have the time to do unilaterally, and, you know — and, you know, I guess I want to be real —very clear about this.

We are already stretched very thin on the number of bills that you see, the nine or ten bills that are on the memorandum that Commissioner Peak has referred to. And some of them could take a heck of a long time. The Critical Buildings Measure, Senate Bill 5x, I don't know how to describe it other than saying that it's absolutely a revolutionary concept, to go after, you know, high-occupancy dangerous buildings, and it involves, you know, issues like we've never faced before, in terms of the — what this — how to carry it out, and the engineering and technical issues and the social issues. And so, we've got our hands full.

And I guess what I want to make clear is, we need as much advice and direction that we can get from the Commission and authority to go on to these when we have the opportunities, but recognize we won't be able to pursue them all. We just won't be able to do that.

COMMISSIONER IWAN: I just wondered, in that regard, maybe it would be more appropriate, instead of moving to sponsor this legislation, to move to instruct the staff to take appropriate steps to work toward the sponsoring of such legislation. I'd hate to get to the position of where we voted to sponsor something which we — never happened.

Could that be favorable to the mover? Or, if not, I will make an amendment.

COMMISSIONER PEAK: I would — I would say to sponsor or to work towards sponsorship of.

COMMISSIONER IWAN: All right.

CHAIRMAN CLUFF: Okay. The seconder?

COMMISSIONER SCOTT: That's fine.

CHAIRMAN CLUFF: Any further questions about the legislation?

COMMISSIONER McMULLEN: Yes. I have a question.

CHAIRMAN CLUFF: Yes.

COMMISSIONER McMULLEN: If we're going to amend the motion to read "sponsor or work toward sponsoring," I would think there should be some sort of criteria given the staff as to how they're going to select what they're going to sponsor and work toward sponsoring.

CHAIRMAN CLUFF: Well —

EXECUTIVE DIRECTOR TOBIN: For example?

CHAIRMAN CLUFF: Yeah. Do you have some specific criteria you'd like to offer?

MR. McMULLEN: No. I think we should hear from Mr. Tobin on that, as to what criteria you'd like to use. Or do we have time to develop that later? I guess that would be a question I have. Do we really need to make that decision today, or what's the timing?

EXECUTIVE DIRECTOR TOBIN: I'm prepared to talk about it.

You know, we don't even have the time on the agenda, but I think, you know, there certainly are — one of the things I think that is so exciting about working for this Commission is that you all do talk about this a lot, and we have a five-year program that lists 72 initiatives. And these initiatives tell us what we need to do, and there's a priority order in that book, with the initiatives and the existing hazardous buildings and emergency response being the — acknowledged as the two areas of highest priority.

And it's that — and through that process, we identified ten initiatives that we were to push on harder than other initiatives, not to tail off on the others, but, you know, we have sort of a policy direction already, in terms of — that I would use, in terms of, you know, going after these and selecting these.

There's also the very practical matter that would — we are already out on a limb on some of these. And, you know — and you don't — you have an author lined up already because they introduced it in the special session, the bill was written, and like it or not, we're the sponsor. And we have to follow through. By "following through," that means going to whatever meetings the author needs, it means getting the support, it means contacting legislators to get information when it's necessary to meet with the opposition, it's to be there and do whatever is needed, regardless, if it's eight o'clock in the morning or ten o'clock at night. And that comes with sponsorship, and we will follow that all the way through.

And those that we have in the first — 12x, 15x, the amendments to 604, the critical buildings, 5x, the bond initiative for state-owned buildings, the economics of earthquakes, SB 20x, 51x, the technical amendments to — well, yeah, to 20 — the technical amendments to an existing bond measure, the Cortese one for anchor bolts, cripple walls — those are all ones that we're already out on a limb on. Legislation has been drafted already with groups, and we've got those, and we'll be pursuing those, you know, without question.

Restructuring the dam inundation program, the Education Task Force, the Hospital Seismic Safety Act, all three require a lot of work by other agencies, and I don't necessarily know. They're all important to us. They're — they're ones that I would like to see go, we would push, we'd try to support, especially if they got in there, but those would be lower priority.

The one that I think that I'm missing out of this whole discussion, quite frankly, has to do with the next one, and the next one is broadening or strengthening, or both, of the unreinforced masonry buildings law. And I have heard a lot said in meetings, of where we want to strengthen the law, the opportunity is now — we had testimony during our hearings from organizations who, before, had been against having mandatory provisions, and they said, "You know, we want mandatory provisions."

And this is a bill, and it's our law that we sponsored, and I need to know, you know, do you want to push this, how do you want to strengthen this law, and how do you want to broaden it, because we're not ready to start writing without that kind of direction from you. And I guess that's what I really desperately need from this Commission, and that's far more important to me than, you know — you know, that's far more important to me right now because, you know, we've got — in terms of staff work, working with authors and groups on that very specific subject.

Now, ways maybe to start that kind of discussion, do you want to extend it to Zone 3? Zone 3, after all, is the second most active seismic region in the United States, and that covers a portion of California, about 20 percent of our population, and a couple hundred jurisdictions — a heck of a big workload, and there is a lot more proselytizing necessary, because the awareness isn't as great in Zone 3 as Zone 4. It might take away from our efforts in Zone 4, but it's an important question.

Making it stronger, do we want to write a law that says that if you're going to work on these buildings, there is a state minimum standard prepared by the Structural Engineers Association, CALBO, approved by the Commission, approved by the Building Standards Commission, or approved by somebody else? Do we want to get that process to where there's a model code for strengthening unreinforced masonry buildings that is at the end of the Uniform Building Code? Do we want to put something in a law that says jurisdictions, you know, shall strengthen or retrofit or demolish buildings, all unreinforced masonry buildings, by some set date? Or do we want to try to write some sanctions into the bill?

I need to know sort of what the flavor is, because this is one where, you know, I can get — with my ideas and enthusiasm for this law, I might get out on a limb that you guys want to all saw on. So, I'm really interested in feedback on that specific issue. It's terribly important, these policy issues, in the state.

And I could ask the same kinds of questions about the SB X, which I think we have a little more time on. But I think it's one that we have to very carefully consider as well.

CHAIRMAN CLUFF: In light of the agenda that we have and the time that's available and the schedule that we're on right now, let me ask the commissioners to take it upon them, each individually, to be responsible for giving you feedback. If there's some burning item that can't wait and needs to be commented on right now, here at this meeting, fine. But let me ask each one to go through the list and to call the appropriate staff and to give the staff this kind of feedback that Tom needs.

It's a very important activity, but we can't compromise, I think, today's agenda by spending what may be an inordinate amount of time on this topic.

Bill?

COMMISSIONER IWAN: I had one further question, just on that specific point.

I notice that SB 22x is not included in this recommendation, this Garamendi —

COMMISSIONER PEAK: It will be, on another list.

COMMISSIONER IWAN: Okay. So, this is not intended to be an inclusive list —

COMMISSIONER PEAK: No.

COMMISSIONER IWAN: — of bills we might sponsor.

COMMISSIONER PEAK: No, there's others, yes.

COMMISSIONER IWAN: Okay.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: A quickie. I heard one other thing, in that we should agenda certain of these issues for future direction. And so, I would expect, on our next agenda, to have one of these — and we need to know about it in advance so we can be prepared.

CHAIRMAN CLUFF: Okay. So done. All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

COMMISSIONER PEAK: All right. I'll refer you now to today's handout. We have — at the top of that on the first page, we have — and I know I have the same copy you have on this — we have five additional bills which we propose that the Commission sponsor, and I will make a motion to that effect at this time. And that includes the Garamendi SB 22x, on the top of today's handout.

COMMISSIONER IWAN: I'll second the motion.

CHAIRMAN CLUFF: Okay. Discussion on the motion?

(No response)

CHAIRMAN CLUFF: Hearing no discussion, all in favor, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

COMMISSIONER PEAK: Next in line, other bills of interest, or what we usually — what we have called in the past the Dow Act bills that have been introduced from the special session. They run — well, the assembly bills run up to the bottom of Page 2, and then the senate bills start on the middle of Page 3 and continue over to the middle of Page 5.

And our proposed positions, which were gone over with the staff and the Legislative Committee on Tuesday, these are "watch," "support," "oppose," as usual. Whatever our positions are are shown there.

And I will make a motion that the Commission adopt the positions on those bills noted, the "x" bills, so-called, both assembly and senate, that we adopt the positions noted on today's handout.

COMMISSIONER IWAN: Second the motion.

CHAIRMAN CLUFF: Any discussion on the question?

(No response)

CHAIRMAN CLUFF: All in favor of the motion, "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

COMMISSIONER PEAK: Well, there are a couple of —there are additional bills. The holdover, or two-year bills, are listed.

There are two assembly bills listed at the top of Page 3, AB 994 and AB 2236, and from the middle of Page 5 on, there are one, two, three, four, five, six — or five senate bills and the senate constitutional amendment listed. Our positions are set on these, with one exception, which we want to change at this time.

There's no action necessary. We just follow the same positions this year as we had last year. The one bill that we want to change our position on is on the top of — near the top of Page 3, Assembly Bill 2236, Costa. And we want to change our position — that shows the proposed new position, incidentally, so I will make a motion, and then I'll ask Tom to explain why we want to make this change.

We formerly were neutral on this bill. We want to go to an oppose-unless-amended position on this measure, and I'll make a motion to that effect.

COMMISSIONER IWAN: Second.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: Senate Bill 2236, carried by Assembly Member Costa, would require cities and counties, before they could use Proposition 77 funds, to have implemented their housing element. The housing element is one of the elements required for jurisdictions to have as part of their general plan, and this is an element that some jurisdictions have had a difficult time implementing because of various kinds of housing problems I think that we're all familiar with.

Our concern is, is that these funds are intended for reducing the threat to life in buildings that are existing. And although it can be seen as an incentive to cause a jurisdiction to move ahead on housing, and their housing issue is certainly involved, we feel it's sort of an unnecessary standard, and perhaps, in some cases, a Catch-22, that if you haven't — if you can't use the Prop 77 funds, you can't implement portions of your housing plan, and we get things kind of mixed up in a way that we believe is unnecessary for furthering seismic safety.

And so, we would like to carry that message to the legislature, that Proposition 77 funds should be made available to jurisdictions that have taken the step to adopt their retrofit programs and the hazard mitigation programs required by Senate Bill 547, and not to have them become part of other issues that are more complex and involve other kinds of issues and so forth.

CHAIRMAN CLUFF: Any further discussion?

(No response)

CHAIRMAN CLUFF: All in favor, "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

COMMISSIONER PEAK: That's the end of the Legislative Committee report, Mr. Chairman. And I thank everybody for their confidence in the staff and for their confidence in what little the Legislative Committee adds to the process.

And I urge everybody to please go over this material as closely as time will allow, and get your comments in on any of these measures that we brushed by rather quickly here, preferably before the 1st of January. If you can't, why, certainly after that, as soon as you can, prior to the next meeting.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. Just real quickly, because I know this can get confusing, but if there's an "x" after the number, that means the bill was introduced during the extraordinary session. It's likely that when the legislature comes back in January, they'll not only reconvene the regular session, but reconvene the special session. There may be bills with this same number, so the "x" there means it's extraordinary session.

Also, the bills that are in blue, that means that that is — also refers to a bill normally that we refer to in the legislature as having an "x" after it. So, just to make it easier, there may be bills with the same number, different color. So, blue is the extraordinary session. The regular black or brown means regular session.

CHAIRMAN CLUFF: Tom?

EXECUTIVE DIRECTOR TOBIN: This all reminds me of a B-grade movie called Rollerball where they — just like in the roller rink, they changed the rules from time to time, and no one ever knew what the rules were, and then it's — I feel like we're on roller skates.

Mr. Chairman, we have not provided bill copies of every one of these bills to each of you. And if you have an interest sparked by this summary, or an interest in any other bill, please give us a call, and we'll be glad to send you copies of the bill.

And we have copies that we get on a regular basis, and we can easily put them in the mail to you, because we want to encourage you to take the time to read the bills that you're interested in and provide us with information. This Commission is unique, maybe, for a lot of agencies where, you know, the directors have staff to do all of these kind of work.

And you're our eyes and ears to the expertise that we want to bring to bear into this, and I know we're not going to have time at the Commission meetings to discuss these bills and to bring that out, so we're really going to have to rely on you to seek out those issues that you're interested in or have some expertise in, and respond to our requests for advice on these bills. And any bill that you want to have, we'll be glad to send to you.

But we're really reluctant to give each one of you copies of 40 bills, because by the time we get done collating them, we probably have missed some committee hearings. But we'll be glad to give you copies of bills and answer your questions.

And it's not only that we're glad; we desperately are seeking your advice on each of these bills.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes?

COMMISSIONER BOLT: I'd like to ask Mr. Tobin if he'd comment on this point. We have an enormous number of bills coming up. We have an opportunity, extraordinary session and regular session and so on, to move things forward.

But I'm a bit uneasy that we really don't have a policy, or perhaps a procedure in place, that enables us to take the initiative in filtering all these — but we know that, I suppose, a majority of them will never be signed into law — that — whereby we can really take the opportunity of this great number of bills out there to push certain ones of them, to suggest amalgamations. Are we being effective as a Commission in really having in place a procedure whereby we can get the most out of this plethora of legislation?

EXECUTIVE DIRECTOR TOBIN: Well, I think that we do. I mean, it's not perfect, and I can assure you that we could do a lot better job of — I explained to the Executive Committee last night what the staff does. There will be thousands of bills introduced in the legislature, and we will electronically search these for key words, for sections of a law that affect earthquake safety. And every one of those bills that triggers — that is triggered by that search will be read by Brian Stoner for its application to what it is we do.

Those that he determines have some application will then — will be ordered, and copies will be given, and every bill, then, of that nature is read in its entirety by Brian, will be read by Tim Cronin, our legal counsel, and I will read every one of those bills. And then every one of those bills will be read by another staff person with responsibility in that area. So, each one of these bills is going to be read four times.

When we read the bills, it's to see whether they're good or bad, whether they have opportunities to be changed in ways that help us carry matters out.

And one of the bills I like to use as an example is last year's AB 818, carried by Assembly Member Areias, that, as written, called on CalTrans to inventory bridges owned by local governments, and to comment about their status, their adequacy, and so forth. And we went to Assembly Member Areias and asked him to amend that legislation to include in there an evaluation for the seismic safety of these local-government-owned bridges. The author took it, the bill was passed through the legislature, and signed into law. And that carried out one of — part of one of our initiatives.

And so, as we read through these, there's also that other filter, is: what initiatives are we trying to carry out? I mean, we have our marching plan, and it's — and reading those through, we're looking for ways to carry it out. And oftentimes, a bill that we might want because it's okay and it's relevant and we're — but we're not going to do much about it, will be changed to a support if we can get it to do something.

And in a lot of respects, we couldn't have, you know, really cared a lot whether or not CalTrans inventoried local government bridges, but if they're going to do that and evaluate them for seismic safety, then we're going a long way to solving some of our post-earthquake transportation problems. That then became a very important bill.

And so, yeah, we do have a way of going through and doing that. The legislature — the California Legislature is different, I think, than Congress, where they sort of go around key committees and key authors and carry bills in a different way. The bills that you see here may be only half the bills that deal with earthquakes, and we have absolutely no idea how many bills will be introduced this year. And I've heard rumors of 500 earthquake bills. I don't know. They might — may even, you know, be the same.

But what's nice about the way the California Legislature works is that a lot of constituents can go to a lot of different authors and they can come up with ideas and address perspectives that they see that are important. And we'll try to work with them through the committees, and the committees try to consolidate this to really talk about what's important.

And the bottom line that comes down is, you know, how much law can you change, and how much money can you spend? And we'll be there pushing our agenda. We're seeing the legislature as having a coordinated program, and we will be, obviously, pushing the ones that we think are most important.

Our silence won't mean that we're against it, on other bills, but it certainly will be clear that that's not as important as the bills that we're pushing as part of the legislation.

COMMISSIONER BOLT: One small point.

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: What you say sounds great. I suppose, since we don't know exactly what's going on with all these bills, no legislator knows either. I wonder whether, with the equipment you have in the office now, word processors, spreadsheets, and so on, the Commission couldn't render a service, not only to its own members, but also to the legislature, to, as you get this information about the bills, to classify them and to lay them out in spreadsheets under the — under the headings that we have in our plan, our five-year plan. Certainly, for me, it would be very, very helpful to be able to look at such a document.

And I mention that to Commissioner Peak as something that your committee might want to see how to better deal informationally — from an information point of view, with this great amount of material that's swimming around here now.

COMMISSIONER PEAK: I think, in all practicality, though, that's not going to be possible, Bruce. It would be — it would take quite a bit of staff time, and we're just not going to have it.

They're anticipating that there's going to be three or four people a day going to committee hearings on bills, and going to different committee hearings and trying to coordinate their actions and so forth. And that's over the first couple months of the legislative session. I think it would be very practical to do some — anything additional.

Just like we're trying to cut these lists down that we're giving to you, without cutting out all the information, obviously, to the Commission, but we're trying to be practical in what we can — what we can handle. It'll depend on how much comes in in January and February, of course.

I might add, on top of what — the screening that the staff does, they come up with a recommendation, then. Before that recommendation comes to you, as on this handout sheet today, the Legislative Committee meets with the staff, we go over them again, and these are the joint recommendations, or the recommendations of the Legislative Committee, not of the staff. Some of these have been changed from what the staff proposed initially. And so, that's another screening, on top of what the staff has already done.

CHAIRMAN CLUFF: Well, we need to move on. It's interesting to me to observe, in working with the staff, Tom and others, in the past, prior to the earthquake, and at times, we were having trouble filling a full agenda for some of these meetings. All we need is an earthquake, and now we're overwhelmed with things to work on. So, it does help us to have some of these events.

The next agenda item — and we're exactly now an hour and five minutes behind our formal agenda — we do have a couple of places where we can take up a little slack, but I'd like to ask the forthcoming presenters to keep it as brief as possible. We don't want to shortchange any aspects of this.

But the next agenda item is the Department of Corrections prison report. Kyle McKinsey, I believe, is here with us today.

Welcome, Kyle.

MR. McKINSEY: Thank you.

CHAIRMAN CLUFF: You've been here with us before, and I presume you've seen the Commission report, and we'd like to hear from you.

MR. McKINSEY: I will be — I will be very brief. As you know, you do have the report.

I just want to, again, thank Commissioner Fratessa and the Committee on State Prison Construction for their diligent work over an extended period of time. We believe that effort was one that was really conducted in a spirit of cooperation, with the objective of assisting the department in improving our construction program. And I'm very pleased to say that I think the suggestions were improvements.

And what I'm here today to provide you, very briefly, is simply a status report on the implementation of some of those recommendations.

And I think, for purposes of brevity, I would like to discuss those things in which the recommendations constituted a change in our program, rather than an affirmation of continuing a certain type of process.

Relative to that, Recommendation 3 talked about utilizing Title 24 of the California Administrative Code as our guide. We certainly do that, and have done it. That has been updated by reference to the United Building Code of 1988. All of our buildings are designed relative to those standards, and in some cases are above the standards that are identified in the code.

We do design all of our institutions to Seismic Zone 4 standards, whether or not they're in Seismic Zone 4. We do have criticalness factors of 1.5, where, in some cases, standards require 1.25. We started that some time ago, and we're continuing that.

Relative to the recommendation that all sets of drawings should include a statement of the basis of seismic design and of what signature of the engineer of record. We had been doing that, but we've now made it a contractual obligation in our standard contracts with consultants. We have included that in what we call our design and construction bulletin, which is basically our policies and procedures handbook that governs the program, that has wide distribution to all of our consultants as well as all of CDC staff involved in the construction program.

I think the major recommendation of the committee and the commission was that the department institute a greater and more independent peer review process of our drawings. The department accepted that recommendation. A year and a half ago, we did go out with an RFQ, request for qualifications, for independent firms to do that type of peer review.

We had ten submittals; we shortlisted five firms, and we selected two firms that have been working with us for the last year and a half on peer review efforts. They are EQE Engineers and URS, Incorporated, that are working with us.

They have reviewed all of our third-generation drawings as they've been developed, which include about seven institutions that are in the process of design. We have a system set up that requires written comments to our engineers of record and to our program managers. Those comments are then incorporated in our designs as appropriate. The peer reviewers then go back over our designs to ensure that they have been incorporated, and sign off on the fact that they are incorporated.

In a recent meeting I had with the principals of the peer review firms, the feedback I had received was that things were going very smooth, that their comments are being incorporated. We have had no major disagreements between the engineers of record and our peer reviewers, so that we're — we're very pleased to see that particular process working well in our system.

Another recommendation was that in the event of a dispute between the engineer of record and the independent peer review firm, that a third firm be retained to arbitrate any disputes. Again, we haven't had any such disagreements to date. However, we did hire and retain two peer review firms, in part for workload and in part to meet the spirit of this recommendation that one firm would be available in the case of — in the case of a major disagreement among the engineer and consultants.

Another recommendation was that the engineer of record should assist in establishing and monitoring the structural testing and inspection program. Again, we have included that into our contract requirements. That is now happening. We have included that as well in our design and construction bulletins that are out to the field, with clear instructions on all of our consultants to follow that particular process.

Another recommendation with which we do not totally agree was that the law be changed to require that the testing agencies be selected based upon qualifications rather than the lowest responsible bidder. We did point out to the committee that that would require legislation, that we had no reason to believe it was necessary, and that we found that the current process of selecting testing firms through the lowest qualified bidder was not posing any particular problems in our system that we were aware of at the time.

The — another recommendation was that the structural engineer of record be in a position to actually approve the structural inspectors on any given job. We are doing that. We think that is working, and we've had a couple of situations in which inspectors that were proposed were determined not to be qualified in the view of the engineer of record. We have subsequently found people that do meet those qualifications to — to satisfy the structural engineer of record's needs on that.

Another recommendation was that we have a direct line of communication between the structural engineer of record and the field inspector. We are doing that. All testing results are being — going through our construction managers as well in the field, but copies are going directly to the structural engineer of record. That is also contained in our policies and procedures guidelines that we have developed.

That basically summarizes the major recommendations of the committee and what the department is doing about them. Again, we would like to thank the Commission, and particularly Paul Fratessa's committee, for the work that they have done and the assistance that they have given us. And we think that the recommendations were such that our program has been improved.

CHAIRMAN CLUFF: Thank you very much. Any questions?

Yes, Commissioner Fratessa.

COMMISSIONER FRATESSA: It's good to see you again, Kyle.

MR. McKINSEY: Good to see you, Paul.

COMMISSIONER FRATESSA: One of the issues — and you just touched on it at the end — that was of concern when we were going through this review process had to do with the — getting the field questions to the structural engineer of record in a timely manner.

MR. McKINSEY: Um-hmm.

COMMISSIONER FRATESSA: And that was — there was some problems with that with one of the projects looked at. And you just said that you now do that through the construction manager.

MR. McKINSEY: No. Excuse me, but —

COMMISSIONER FRATESSA: Yeah. I'll tell you what I heard, and then feed it back to me. And that, we thought, was, in fact, one of the problems, where the structural engineer of record did not know in a timely manner that there was a field problem or a poor test.

MR. McKINSEY: Um-hmm.

COMMISSIONER FRATESSA: And how have you made sure that in a very timely manner, like there's a problem in the field today, that the structural engineer knows about that problem today?

MR. McKINSEY: We are — we're doing it — the communications relative to field clarifications, RFI's, RFC's, field tests, are going to two places simultaneously: to the structural engineer directly, to the construction manager directly. So, both parties are receiving that information.

COMMISSIONER FRATESSA: And so, the construction manager is not the clearinghouse as to what goes on with the structural —

MR. McKINSEY: Well, they're — they're not the clearinghouse in the sense that they're getting the information first and then passing it out. They do serve as a clearinghouse to make sure that responses are timely and that we are keeping track of what's going on in the field from our contractors. But it's no longer a sequential kind of submittal process.

COMMISSIONER FRATESSA: Good.

CHAIRMAN CLUFF: Any further comments?

Commissioner Bolt?

COMMISSIONER BOLT: I think we have here, obviously, an example of the way that the Commission can be helpful in improving seismic safety through a committee such as this, which was able to work so well with a state agency. And it was very heartening to hear your comments about that.

Where do we go from here, Mr. McKinsey? Where do you stand with regard to the existing buildings in the system?

MR. McKINSEY: Well, we do — our system is getting up over 20 institutions now, and we're probably close to 30, possibly even more when we get done.

We do have 12 existing institutions. We continually do studies on fire life safety issues. We have a major capital outlay process that is not that much different than, I think, the University of California, state colleges, or other major state agencies, relative to obtaining funds from the legislature.

We continue to put fire life safety issues as a high priority in our major capital outlay requests to the legislature. Those are annual requests going through the budget process, and we'll continue to do that.

We have 12 institutions that were built in our system pre-1984, when we started our major prison construction program, dating back to the mid-1800's at San Quentin, late 1800's at Folsom, and most of the others are institutions that have been built in the 1940's and '50's. So, we do have a range of physical plants, and we are sensitive to the need to continue to look carefully at fire life safety issues as we —

COMMISSIONER BOLT: Have they been rated for seismic safety, "good," "poor," or "fair" or so on?

MR. McKINSEY: I — Commissioner Bolt, I really can't answer that question to you. I'll certainly find out and let you know.

COMMISSIONER BOLT: Thank you.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Just two quick comments, as sparked by your discussion. Actually, they're related comments.

On Page 5, our Recommendation 5, the committee's Recommendation 5 about peer review, it — down at the bottom — and there's a parenthetical statement, "It might be appropriate for the Commission to request from the profession a statement of the scope of peer review for the Commission's use when the subject is addressed in the future." That seems to me to make a lot of sense.

I don't know whether we've thought enough on that; it's sort of — kind of a good thing to do. And maybe it would be a good thing to do, if we have the criteria and scope, yes.

MR. McKINSEY: That has actually been done.

COMMISSIONER SCOTT: That has been done?

MR. McKINSEY: Just recently. But the Commission does not have it.

COMMISSIONER SCOTT: Okay.

Let me make my second comment, which I make acknowledging that I'm a lay member of this — of this body, and not a structural engineer, and do not claim a technical background, but — and my comment is really about process, not about individual firms.

But, on the other hand, it would seem to me, as a lay person, that any kind of reviewers, if sort of the same independent reviewers are used time after time, eventually you might arrive at a de facto situation where it's almost an in-house relationship.

This is simply a comment on processes and to plan — I think maybe we ought to take another look at what are the criteria of independent review, what is it, and what is it not.

And, as I say, I say that as a lay person and I may be — it may be making kind of a naive comment. But I wouldn't mind seeing us follow up on that, in due course at some point.

CHAIRMAN CLUFF: Paul or Kyle, you want to address that?

MR. McKINSEY: Well, I think — we had a long discussion, as Paul was — on this issue — in the committee.

We have had a peer review early on that was a review by Kitchell CEM of the program manager structural staff. I think the view of the committee was that that is more of an in-house review, where a program manager is concerned with schedules and budgets. We didn't probably feel as strongly about it as some members of the committee, but we certainly recognized that more independence was — could not hurt.

And that's why we went out specifically and contracted separately with two other firms. And I think that is an arm's-length kind of process that we have, certainly totally independent from the structural engineer of record.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: Well, I think what Stan is getting at, in the engineering business, if you ever check your own drawings, it's not so bad the first time, but when you look at it — or when you're writing a letter, you read the letter and you know it's perfect, but then somebody points out that there's some misspelling, or you forgot the comma, and you've looked at it ten times. You keep seeing the letter as you have it up here, but not as to what's there.

I think what Stan was getting at is that after a certain amount of time using the same peer reviewer or same two, that they may start kind of holding into the — "Yeah, that's just like the last one we saw," and that's balanced against the fact that they're familiar with the project, and maybe can more easily do a peer review.

So, I would — I think what Stan's suggesting is that in the course of time, every couple of years, you might want to consider just turning over, say, one of your two peer reviewers, to keep a fresh look, to be sure things are still completely fresh and always a new look at it.

MR. McKINSEY: Well, we'll certainly consider that. I appreciate that.

CHAIRMAN CLUFF: Fine. Any further comments or questions?

(No response)

CHAIRMAN CLUFF: Well, thank you very much.

MR. McKINSEY: Thank you very much.

CHAIRMAN CLUFF: Have a good day. Thank you for your brevity.

We'll now move to the next item, which is the earth sciences research proposals. We have three presenters that we plan to have them present all of the information before we open it for questions for any of them.

And we are — have a need to — let me just say, these three research proposals, or at least the first two, are the ones that we have considered and talked about in past — at least in concept — past meetings. And it's, I think, very worthwhile for the Commission, who has the role and responsibility for the State of California to look at a balanced program, not only in earth sciences, but in engineering and social science, and probably policy and the whole wide spectrum of activities that deal with seismic safety.

So, we were very pleased to see the busy scientists having the time to come and give us a thumbnail sketch of some ideas that they're proposing that certainly will enter into our process and other processes of looking at which research proposals ought to be pursued.

And so, we'll lead off with the Hayward Fault Surveillance Project that's been proposed by Dr. Tom McEvilly, University of California at Berkeley.

Welcome, Tom.

DR. McEVILLY: Thank you, Mr. Chairman, commissioners.

I made — assuming you might be pushed for time, I condensed this into a few copies. Should I —

CHAIRMAN CLUFF: Yes, please.

(Dr. McEvilly distributes copies of document.)

CHAIRMAN CLUFF: Thank you very much.

DR. McEVILLY: Thanks.

And rather than read it in testimony form, I think I'll skim over it —

CHAIRMAN CLUFF: Fine.

DR. McEVILLY: — and I'll leave off any — any visuals for the questioning in case we need them.

The nature of this plan has come from, really, considering the time right now, which I don't have to — have to preach to this group as being extraordinary, given the recent Loma Prieta earthquake. And as I'll mention in a minute, this came — this was prompted by a rather indirect comment from Chancellor Heyman at the Berkeley campus, in a discussion we were having about earthquake-related things, the day after the Loma Prieta earthquake.

Now, I — just for the record, I am a professor of seismology at Berkeley, have been for 25 years, and most of that time, I was also the assistant director of the seismographic station. I have been heavily involved in the National Earthquake Hazard Reduction Program that you're familiar with, I'm sure, of the U.S. Geological Survey.

And in particular, I've been doing a lot of work on the Hayward — on the Parkfield earthquake prediction experiment. I'm presently chairman also of NEPEC, the National Earthquake Prediction and Evaluation Council, that reports to Dallas Peck, the director of the Survey. And the comment from Chancellor Heyman was — encapsulating that short history of my career at Berkeley — he said, "What will you do now, given the present situation?" And I thought about it for a while, but I had no difficulty really in responding what has — with what has come to be an element of this Hayward Fault surveillance program.

And this is a plan for a state-of-the-art monitoring of the entire length of the fault which threatens the East Bay and the greater Bay Area, with I think is arguably a substantial greater, and demonstrably, destruction than that delivered by Loma Prieta, without question.

Now, the timing, of course, is the — is the capturing the moment of the — of the concern of the citizens of the area and the State of California, having had two major warning earthquakes, if you will, in the last few years, with Whittier, and now Loma Prieta; and secondly, capturing, I think, what has — what is the scientific time. We've learned an awful lot in what has been going on in the — in the fine-scale study of the dynamics of these hazardous faults in the State of California in the last ten years, with the — funded largely by NEPEC, by the USGS, and National Science Foundation.

And we — we pretty well agree — I think you'll find good consensus on what the top four or five hazardous fault zones are in the State of California, in terms of major threat to life and property, and we have a general consensus on those probabilities, and much has been made about the successful probabilistic prediction of the Loma Prieta earthquake. We also have learned an awful lot in the Parkfield study about what — what physical measurements hold great promise for understanding more the process of failure on these major fault zones.

So, I argue in this — I propose in this plan an implementation of our best shot along the Hayward Fault. The Hayward Fault is particularly important, because it broke last century in two large earthquakes, 1836 and 1868. 1868, as you probably know, was — was referred to as the Great Earthquake at San Francisco until 1906. And another element which has gotten much press, and we can't attach a lot of significance to, is the fact that there has been, with the small sampling of two cases, 1836 and 1868, an apparent coupling of the peninsula segment of the San Andreas to the Hayward, and people have made a lot of that, particularly in the press.

We suffer from very poor data on the Hayward Fault. It essentially is paved over, and it's a very noisy stretch of a fault zone, in terms of monitoring at extremely high resolution, where the background cultural noise from traffic and industrial — industrial activities reduces the sensitivity with which you can operate instruments in the conventional surface installations.

So, this proposal addresses — addresses a monitoring system for the Hayward Fault itself, which we know, almost exactly, the orientation through the East Bay, and we can walk from curb to curb, from street to street, and track it most of its length. We know pretty well how to get down deep and get the sensitivity up on our instrumentation, from our experience in the Parkfield experiment study, and we know the band widths that we probably need to record.

The visuals I was going to show were going to demonstrate the order of magnitude improvement in resolution that one gets by getting the high-sensitivity, high-frequency measurements at depth in the Parkfield experiment, where we're now routinely locating earthquakes, with relative precisions of 10, 20 meters, rather than 1 or 2 kilometers, which is the conventional capability with, let's say, the surface-based SPARS networks.

The second element that we've learned an awful lot about in recent years is the deformation of the crust along the fault zones, and — and the fact that we can — we can measure it accurately to better than — to approximately a part in 10 million. And that behavior, the stress pulses that track — that move across the fault zone, are clearly related to the microearthquakes that occur. We presume they're going to be related to the major earthquakes. They're related — they're related to the water level changes. They're — the — they undoubtedly, of course, are driven by the stress field.

So, and overprinting on that is the development of the — of the satellite global positioning system for navigation. And they have navigational satellites, one of which was just launched the other day. And that constellation of satellites allows absolute position monitoring on the surface of the earth to a few millimeters in horizontal direction, or in horizontal position.

The obvious way to address some of the unknowns on the Hayward Fault, one of the others of which is that we don't know its loading rate and we don't know the distribution of the strain accumulation across the entire Bay Area, is to instrument the Bay Area with an array of these fixed global-positioning sensors.

So, the proposal is for — for a number — I use the number 40 — of bore hole sensor installations for the — for the wide-band seismic data, high-resolution seismic, along the fault zone, the full length of the Bay Area — of the East Bay, and a complementary array of global positioning system receivers throughout the entire Bay Area, from — probably from the Farralones to the other side of the green belt in the Livermore fault zones.

And with that, we would be able to watch, on a scale of weeks, really, the deformation of the Bay Area and the fine-scale fault zone behavior along the Hayward. We hope to be able to define the segmentation on the Hayward Fault, which we're really not sure of yet. We don't know what the ends of the '36 and '68 — 1836 and '68 earthquakes were. We'd like to know that. We would be able to focus in on what appear to be the nucleation zones. There are little kinks in the Hayward Fault that we would like to watch extremely carefully.

I think that in a very few years, in a project like this, we'd be able to at least predict the probable strong motion radiation associated with the coming earthquakes, which are the inevitable magnitude 7's. And we — we would hope to be able to develop a predictive scenario on them as time goes on.

I think it's appropriate for the State of California to do this, because it is a — it's a research facility that would be used by everyone, from the — from the otherwise-funded seismological research community to the — to the earthquake engineering community and decision-makers on monitoring the fault zone. In a way, it's a scaling up of the Parkfield experiment, with much more attached to it.

I think also that — that it would be appropriate for the State of California to think about continuing this to the four to six most hazardous fault segments in the State of California. I think they all should be instrumented ultimately. It could be done in ten or fifteen years, with a continuous — continuous funding, if the legislature could get a mindset to — to putting in this facility.

It's not really a — it's not really a request for a nebulous research support; it says that this is our best shot at understanding and giving to the appropriate researchers and decision-makers the best information, physical information and predictive information, we can come up with on the handful of extremely threatening fault zones in the state.

Thank you.

CHAIRMAN CLUFF: Thank you very much. I hope you don't mind waiting until we've had the other presentations. We'd like to ask you some questions.

DR. McEVILLY: Sure. That's fine.

CHAIRMAN CLUFF: Thank you.

The next presentation is — topic is thrust faulting in Southern California urban areas. Tom Henyey, from USC, is here to address the Commission.

Welcome, Tom.

MR. HENYEY: Thank you, Mr. Chairman, and committee.

Following the example of my predecessor here, Tom McEvilly, I will refrain from showing any slides or overheads at this point. I think it's perhaps not necessary at this stage. If there's interest later, we can do that. I also will not read, but rather, just make some comments regarding this, in the interests of time.

CHAIRMAN CLUFF: Do you have a written comment you can leave with us?

MR. HENYEY: I believe you should have a copy of that. I sent a copy to — faxed a copy to —

CHAIRMAN CLUFF: Oh, that's right. It's in our handout.

MR. HENYEY: — the Commission.

CHAIRMAN CLUFF: Thank you.

MR. HENYEY: As the chairman knows, and Tom Tobin as well, I made a presentation before the Research Committee of the Seismic Safety Commission following the Whittier Narrows earthquake, which was very similar to what is being proposed now for Northern California.

I think we all jump on the bandwagons here to some extent, which is, I think, something we probably should do, to try to see if we can't enhance the research efforts in seismology in California. And at the time of the Whittier Narrows earthquake, or following the Whittier earthquake, we proposed something very similar to what Tom has proposed here for Northern California, namely, to begin a more systematic study of the thrust faulting in Southern California.

I think, as probably everybody knows, in the Southern California area, where the San Andreas takes a very large bend, the plate motions are manifested there as thrust faults in a large — to a large degree, principally in the metropolitan areas as opposed to strike slip. Although we — we still have the San Andreas cutting through there, I think many people would argue that one of the principal hazards is from the thrust faults.

Now, this — we've got a very good historic record here suggesting this to be the case, starting from the 1952 Kern County through the San Fernando earthquake of '71, the Santa Barbara earthquake in '78, and the Whittier Narrows of '87.

All of these events, major events, potentially damaging and damaging to metropolitan areas, all occurred on this same thrust trend. So, it's, I think, becoming — it's coming home to us in Southern California that this particular set of faults may, in fact, be fundamentally more important from the standpoint of seismic hazard than perhaps even the San Andreas, although, obviously, we can't neglect the San Andreas.

The Whittier Narrows event occurred on one of these so-called buried thrust faults. This is not a new class of faults, but it's a class of faults that we have — we've come to realize has been perhaps underrepresented in our — in our studies of faults in California.

The first event in sort of the modern seismic era, in the last, say, twenty years or so, was the Coalinga event, which was demonstrated to have occurred on a very deep fault which did not break the earth's surface, but rather, manifested itself in terms of a very large fold at the surface. The Whittier Narrows, the second such event, also occurred on one of these structures, a fault which does not daylight and — but yet, has over it a very, very large fold structure.

Now, this particular fault on which the Whittier earthquake occurred, or, let's say, this particular fold structure, runs virtually through the most populous region of the Los Angeles Basin, from the Whittier area through downtown through the Wilshire Corridor, to Malibu. And as a matter of fact, some of the earliest and most prolific oil fields in the Los Angeles Basin are located along this fault trend.

If one looks at the relief across this giant fold — again, a fold at the surface and a fault at depth — one finds that the relief, from the bottom of the Los Angeles Basin, which is about 20,000 feet below sea level, to the top of the fold, is on the order of the relief that we find from Pasadena to the tops of the San Diego Mountains.

So, this structure is clearly a very imposing feature in the geology of Southern California. And it effectively tells geologists that, at least in the very recent geologic past, it's been a very, very active structure. And when we start seeing earthquakes such as the Whittier Narrows earthquake — or Long Beach was like this — then we begin to worry that this activity may be coming
— may be continuing up into the present.

We don't know at the — at this time what the level of activity is on these faults. These again — well, in the case of the Hayward Fault, it's paved over, and in the case of these faults, they're buried beneath other geological strata.

We do have some suggestions that the convergent —convergence rate across the Los Angeles Basin is on the order of a centimeter per year. Now, for reference, on the San Andreas, motions are on the order of a few centimeters, maybe 3 or 4 centimeters per year. So, it's not an insignificant amount of movement per year. Some estimates have the convergence rate as high as 2 centimeters per year.

The earthquake activity that we've had in the recent past is — falls far short of absorbing this convergence. Now, if, in fact, this convergence is as it's thought to be, on the order of a centimeter per year, then either it's being taken up by plastic deformation in the earth, or we are building up toward large events that have not yet occurred.

Now, again, this convergence rate is over a very large area and is still fairly uncertain, based on the types of measurements that have been made.

I think the kinds of proposals that we would suggest for looking at this trend are very similar to what Tom has proposed for the Hayward Fault. Our interest is in using not only existing technologies, but some of the newer technologies that are coming into existence, such as the GPS, global positioning systems, and the new broadband networks, and also in placing instruments down holes. So, I think that if we were to make a proposal for a study of this structure, it would look very similar to what Tom is proposing.

Now, one of the problems that we have, of course, with this very fault trend — and I'm — I'm now moving from the general thrust fault problem in Southern California to the more specific problem of the buried thrusts, again remembering thrust faults occur from San Bernardino to essentially Point Concepcion, along this Transverse Range Trend, but if we focus now on the buried thrusts, which are these hazardous structures in the Los Angeles Basin — and because they're buried, we've also built on top of these structures — so, again, focusing on these guys, we probably have to approach the problem in a somewhat different way, in that we need to first find out where these faults are.

We suspect that they are beneath most of these large folds in the basin, and I brought a drawing, if you're interested, that shows the location, roughly, of these folds. It's a belt on the order of a few kilometers wide, as I say, stretching from Whittier to Malibu.

There's another belt running essentially along the beach areas, from Long Beach out through the South Bay area and into Santa Monica Bay. We're pretty certain that there are faults, major faults, beneath these, these fold trends, and we would like to know something about the geometry of these faults, in particular what their segmentation is. We think that, in fact, segmentation may be a key to looking at the sizes of — potential sizes of earthquakes that we might have on the fault.

Once we've discovered a little bit more about where these things are and what their geometries are, perhaps we can come up with better ideas of how to study them.

I've suggested in my little write-up here that you all have that there are some things that we could do right away, including using seismicity to attempt to locate any active strands of these — any active pieces or segments of this — of this fault trend.

We certainly need a much better effort in GPS, or let's just say in geodetics, in order to determine where the strains are building along this trend. Is it uniform or is it not uniform? Is it building along the main frontal faults that are exposed, or are these buried faults, in fact, key elements to absorbing this 1 to 2 centimeters of convergence across the transverse ranges?

And we also need a much better effort at using industry-type seismic data and well data, to begin a much more systematic geologic study of these features.

So, the kinds of instrumentation, the kinds of approaches, in many respects, would be similar to the Hayward, but would involve perhaps some additional elements as well.

It's my general feeling that these two programs, on the Hayward Fault and perhaps a program on the buried thrusts of the Los Angeles Basin, would be two very nice sort of flagship programs, if you will, for the state to consider in the earth science arena. If, in fact, this is something that the earth scientists ought to be working on, I think that we'd be hard-pressed to find two better examples of trends that we ought to be looking at, being that they are in our most populated parts of the state.

So, with that, I think I'll conclude my comments.

CHAIRMAN CLUFF: Fine, Tom. Thank you very much. I'm sure there will be an opportunity with questions — I have a whole list of them, for both you and Tom McEvilly, and I'm sure others will as well. So, if you could hang on.

The next presentation is on Crustal Deformation Mapping Program, Fran Stetina, of NASA. And I would like to encourage the next speaker to follow the example set by the previous two speakers, and try to keep your remarks as brief as possible, and then we can have time to ask questions.

MR. STETINA: Sure. Thank you, Mr. Chairman.

I have some copies of statements that we'll be making.

(Mr. Stetina distributes copies of document.)

CHAIRMAN CLUFF: Thank you.

MR. STETINA: I have two other colleagues that will present some technical details, but I'd like to begin with a few remarks.

Before I introduce myself, I'd like to just say that we're pleased to have the opportunity to follow our colleagues, distinguished colleagues in seismic work. And our proposal, that I've presented a brief summary of to you, is not really in competition with the two previous speakers, but rather, an affirmation of the new technologies that are available. And we would just like to briefly discuss our activities along the similar lines that they were presented to you.

Our proposal also uses GPS, but we would like to point out one particular item. There needs —

CHAIRMAN CLUFF: Could you clarify what GPS is?

MR. STETINA: GPS is the global positioning satellite system —

CHAIRMAN CLUFF: Thank you.

MR. STETINA: — that the defense people are launching, and it's operational right now, especially in this California area.

One of the problems with the GPS system as it exists now is that there are really no new developments to really bring down the costs of the GPS receivers so that large arrays could easily be implemented in multiple areas. Existing GPS receivers cost about $35,000 apiece, and if you put 50 in here and there, it becomes big numbers.

There needs to be a development activity to reduce the cost, we think, to the order of $1,000 per unit, and NASA's seriously considering development along this line with commercial manufacturers, and we would encourage the Commission to help in any way possible to do this.

Let me start with my presentation now. My name's Fran Stetina. My colleagues, Bill Krabill and Don Friedman, are also here from NASA, and we're pleased to be able to present our results to you.

We're in the Earth Science Directorate, so earth science research is our game, but we're primarily interested in taking the research and putting it into practical applications. So, we're a small group at NASA Goddard Space Flight Center that is interested in taking the research and putting it into the field and commercializing it wherever possible.

We're also heavily involved in the International Decade of Natural Hazard Reduction, which will begin next year, as you know, and we're interested in participating in any programs that might make technology available that we develop here in this country, particularly in California, to Third World Countries.

As you know, we have heavily — the State Department has heavily (sic) involvement in foreign aid. Any time we can save lives in Third World countries, we help the U.S. image and, in fact, help the taxpayer save money. So, if we can do any prediction in Indonesia, Thailand, Malaysia, places where — that are just as earthquake-prone as California, then we're doing the whole community a service.

NASA has been interested in this kind of activity, hazard warnings, for twenty or thirty years, and we've put in systems for the State Department. We're presently working with FEMA, the Flood Insurance Management Agency. We've been involved in disaster communications out here in California through our JPL colleagues for many years. We've worked, as I mentioned, with the State Department and foreign disaster people.

And I'd like to bring up another point that was made by the commissioners, and that was the idea of looking into the economics of disasters, and looking into the sector fields to determine what economic impacts disasters have, by sector.

We're working with FEMA very closely on a software package called Spatial Analysis and Modeling Software, which tries to incorporate geographic, demographic, economic data into being able to simulate the impacts a disaster will have from — as on an economic basis, and a sector by sector.

So, we would encourage some cooperative efforts along those lines, so that we could begin to do studies that would help you look at that aspect of it.

The two technologies that are emerging, which we think are very useful in this earthquake prediction program, are the GPS, the global positioning system, which you've heard of, and another system which NASA has been involved in for the last ten years, called LIDAR, or Life Detection and Ranging System. It's very common in the surveying arena, where surveyors now use a light beam for their surveying. And, in fact, some of your Hayward Fault sensors are actually LIDAR's across the fault to measure the deformation of the crust.

We've been able to put this kind of an instrument in the aircraft, and with global positioning system, know the aircraft very accurately, and then be able to conduct very accurate large surveys of the crustal deformation, topography data from an aircraft.

We think this is a very exciting new area of technology, and we would encourage you to encourage or write — I understand the problems of writing letters by this Commission — but we would encourage you to write to the National Academy of Sciences. We're working directly with Frank Press to introduce this technology as one of the key focal points in the International Decade.

So, your — your letter of request from the National Academy of Sciences to evaluate this — this kind of technology for use in your programs, I think, would be a very appropriate thing to do.

Without further ado, I'd like to introduce my colleague, Bill Krabill, who will briefly show some view graphs that show some of the demonstration capabilities of the LIDAR and GPS system to do this mapping that we've proposed.

MR. KRABILL: Thank you, Fran.

I have some reference publications on some of the work that we've done, if you want to pass those around to interested persons.

(Mr. Krabill distributes documents.)

MR. KRABILL: Let me see if we can figure out how to get this on.

(The following remarks were accompanied
by an overhead slide presentation.)

MR. KRABILL: I work with a group of people that operates, maintains, and applies an airborne LIDAR system out of the Wallops Island facility of NASA. I've selected several examples of the kind of data that you potentially could expect to get out of this technology that we've collected over the last ten years. And this data is ten years old, some — okay.

About ten years ago, we did some work with the Army Corps of Engineers in one of their research areas in Tennessee. We selected a series of flight lines that would represent the same kind of data that a ground survey team would collect in doing flood-mapping kinds of applications.

And the sort of data that you would expect in a profiling mode of the laser system looks like this. What you get is a trace as a function of time under the aircraft or distance under the aircraft. It looks like this. You have a series of terrain heights as a function of a long-track distance.

And the Corps of Engineers worked up comparative ground truth data from standard photogrammetric techniques. And in this plot, you can hardly see the difference between the two. The photogrammetry is the little connected squares, and the continuous data is the laser data. And it compared to plus or minus — or to 20 centimeters RMS.

Now, this kind of capability you can get commercially from a number of sources these days. One of the other concepts that we've employed in working on this — the instrument was originally built to test out the application to coastal hydrography, the bathymetry kind of a problem. And it was originally intended to be able to send a laser pulse down and hit the water surface. Part of the energy penetrates to the bottom, where it is directly reflected back.

Well, we — in a spin-off kind of an application, we've applied this to detecting ground level in foliage-covered areas. And this conceptually shows how that data is collected. And an example of it is another flight line from that original mission, showing, out over open ground, where we're comparing to the ground truth to 12 centimeters RMS difference, and then, under a wooded swamp area in here, 50 centimeters RMS difference, not saying who's right or wrong.

Okay. Here's a copy of the photograph that the poor guy doing the photogrammetry was attempting to extract ground level under those trees. The flight line is parallel to the state highway, and runs about through the middle here, and the Wolf River comes down through this area.

Now, one of the other modes that the sensor has is that it can scan. And this is one of the capabilities that's not presently commercially available. We have the only scanning laser system in this country. And an example of the kind of raw data that you get out of the scanner — it's a conical scanner. In other words, as the airplane flies along, the laser beam traces out a pattern such as this.

And you can, in the little overlapping spots, I've plotted the location of each footprint, and you can see the overlapping nature of the scan, which we've developed the software to turn that into a rasterized format.

Well, I wanted to see how good that data was, so I extracted this passage over that same wooded swamp where we went before, this being out over the open field, and this part of the contour plot down here is all in a foliage-covered area. The state highway is right on the lefthand stripe there. And I extracted the along-track profile from the scan data that represented the same data as the earlier profile pass and also the earlier ground truth profile pass.

And you can see that you tend to lose the high-density information that the laser profile has, and yet there's much the same information as the guy doing the photogrammetry had.

And I'll blow up this little segment, down in here, where the Wolf River went through. And there's actually levees on either side of the river where the fill had been extracted and piled up on either side. What I plotted here is a comparison of the laser profiling data, the high-density little "+"'s through here, and the laser scan data, the extracted profiles of the laser scan data, the little hourglass figures, and the photogrammetry data.

And again, it appears that the guy doing the photogrammetry has real problems down into that region.

Of course, once you have a data set like that, you can turn it into a number of products, like a 3-D image or a contour plot. And here's an artist's rendition of what that actually looks like, where that little profile was extracted from this section across the Wolf River.

We have one other piece of information. There was a survey of that state highway road surface, and I extracted the corresponding along-track raster row from the scan data and compared it to that survey. And again, it compares quite favorably.

Well, as I say, this data was all collected some ten years ago. Our biggest problem, and the thing that we spent the most amount of time with, was where the heck was the airplane when you took all this good data. And we've heard a number of speakers refer to GPS. Well, it's really coming on and made a substantial difference in the applicability of this sort of data collection.

Our present program calls for using GPS to position our remote sensing aircraft in this form. It's a differential solution, where you implement a fixed receiver at a known survey point, and you have another receiver in the aircraft, and you do a range difference solution to come up with the position of that aircraft or your remote sensor, whatever it may happen to be.

We believe — and we've got published information that says we're doing in the neighborhood of 10 centimeters — we think ultimately sub-5 centimeters is capable of being extracted from this kind of a technique.

To show you the kind of precision you can get out of GPS, we were tasked, summer before last, to help in the shuttle emergency landing situation. They were implementing new landing strips in Spain and Africa. And in a test mode of getting ready to go implement those new landing strips, we went down to the Cape. They wanted us to supply high-quality trajectories for the aircraft that was doing the check-out, but also, they were — they had need of high-quality survey information.

And so, we set up one receiver in the same mode that I've described, on the top of this shelter. They wanted to know the relative position of the ends of the runway to that shelter, and also the attitude. And so, we put a second receiver on a tripod in the back of a pickup truck. And we put the two antennas side by side for a calibration period, moved the antenna of the second receiver to the tripod, and drove down to the far end of the runway, parked there for five minutes taking data, drove the length of the runway, parked here for five minutes taking data, and then drove back for a post-calibration.

Well, the kind of survey information that you can get from that is indicated here. There was a recent survey of this particular landing strip, a 15,000-foot-long strip at the Cape. We compared to 3 centimeters in distance using that technique for — from the DMA survey, one part in 10 to the 6th for the bearing, and 3 centimeters in height. So, it shows you the kind of precision that you can get out of this sort of thing.

Now, what was kind of interesting was, I kept the system on the whole time we were driving the length of the runway, and I processed that data as if it were a moving aircraft situation, whereas it's in the back of the pickup truck driving down the runway at 35 miles an hour. He's the plot of the vertical trajectory of the pickup driving down the runway. There's 1 centimeter per major division here. This says the whole data set is within plus or minus 2 meters — or 2 centimeters of being flat. I didn't know you could pour concrete that flat. But that gives you a feeling of the precision that's capable in GPS.

Okay. Now, applying that in some other real-world situations, some of our funding right now is coming from the ice program. Of course, they're interested in being able to profile ice surfaces, and ultimately, we would like to be able to detect changes in ice surfaces, a function of global warming or something like that.

Well, this past May, we were in Iceland doing some — a number of experiments. There's a glacier by the name of Breithersmerkurjokul, and we set up a flight line where we came down the surface of the glacier, out across this little late, and out into the — out into the ocean. A photograph of the glacier, looking up the glacier out of the aircraft window, is like this. And looking crossways out the window — notice the interesting periodic features that are in the — appear in the glacier face. And at the bottom of the glacier, there's a little lake where you see little icebergs calving off from this and out of the glacier.

Well, we worked up the GPS trajectory for the aircraft coming down the face of the glacier — and this is awfully dark in here, isn't it? — is there anybody that can cut the lights so we can see that?

Here's the vertical trajectory of the aircraft coming down the face of the glacier and flaring out at the end. The raw laser data doesn't come out too well in this particular kind of a view graph. Most of them reflect from the bottom.

This is a plot of the raw laser data. It includes the vertical aircraft motion from the aircraft itself, as well as the surface variations. But over in here is the range from the laser to the lake surface, and that should agree, for that particular segment, to the range — or to the height, as measured by GPS. And sure enough, a blow-up of that segment across the lake, showing the individual GPS points at once per second, as compared to the laser range to the sea surface.

Well, they gave us confidence that we were indeed going to be able to georeference the laser data. And when we do that, here's a profile of the glacier surface, showing the lake as being indeed flat, at the righthand side. And I'll blow up a little bit of that, showing the snout of the glacier on your left, the lake surface and the little calved icebergs that are profiled out in there, and there's another feature off to the right that I want to show you a plot of in just a second.

But the — blowing up the snout of the glacier, you start to see some of the interesting facets in there.

I have another blow-up. Here you're starting to see the periodic nature of the glacier surface, and the glaciologists tell me you can relate the thickness of the glacier to the frequency that's exhibited in those periodic features.

CHAIRMAN CLUFF: Excuse me. The slides obviously aren't working. Why don't you just summarize the results of what this means, and get to the main topic here?

MR. KRABILL: Okay. The ones — the one little feature off to the right that was — well, you can't see that.

CHAIRMAN CLUFF: Yeah. I think it's not worthwhile to continue, since we need to keep on a schedule here.

MR. KRABILL: Well, my intent was —

CHAIRMAN CLUFF: What are you trying to show?

MR. KRABILL: My intent was to indicate to you the types of data that can be gotten out of both GPS and applying it to a nearby light arc system.

MR. STETINA: What this says is, basically, you can go into very rough terrain, which is what the glacier was, similar to a faulting situation or a situation in the mountains, where you have trees, difficult things, where you cannot easily get in to survey and do very precise maps, probably more precise than existing ground technology allows you to do.

You can reference it to bays, oceans, roads, or any well-defined landmarks, and then simply make relative measurements. So, you might not be able to make absolute measurements to 6 inches, but you can make relative measurements to a few centimeters.

So, this gives you the first capability of doing large crustal deformation maps, which we don't have now. We have just gross maps from aerial photographs. We can now make — we have the capability of now making large crustal deformation maps over long areas, and then, with ground GPS and existing ground networks, compare the change of those large maps in a long-term sense.

I have one more short presentation to let you know of our work towards commercializing these kinds of things. And Don Friedman, from our Engineering Directorate, is responsible for technology utilization and commercial projects, and he would like to say a few things.

MR. FRIEDMAN: Just a couple of quick thoughts, just to show — when NASA was established, we had a charter to transfer our technology from what we learned in our space activities, and one of the programs that we did this with is our technology utilization program. And working with our researchers and scientists, what we really attempt to do is to identify a problem — and obviously, that has been done — to see if we can match a technology. And we feel we do have a technology to help solve a particular problem.

We then go through the process of developing partnerships. And those partnerships are with — of course, with us, with universities, with industry, and other government agencies. We then hope to implement the project and ultimately be able to what we call commercialize it.

And what we're in the process of doing is attempting now to take the technology that's been developed that you've heard today, and really to put it into a secondary application, to see if we can't help solve a particular problem. And that's basically what the program is.

MR. STETINA: Thank you. That's all.

CHAIRMAN CLUFF: Thank you. Why don't you stay up here?

And, Tom, can you — McEvilly and Tom Henyey — come up to the table? We can kind of let all of you respond to questions from the commissioners. There's space up here, if — let me just lead off, given this last point.

It sounded like the NASA people are doing research and leading to tools that might be useful in earthquake prediction. And I guess, to catch on this last point of developing partnerships with other government agencies, let me ask Tom — both Toms — are you people — have evaluated these techniques, and are they useful kinds of things and the kind of activities you people are doing? Have the U.S. Geological Survey adopted these kinds of things?

I know there have been — I've listened to proposals over the last ten years, but this is the first time I saw a presentation where it might actually have some application.

MR. HENYEY: We have several groups now in the earth sciences who are actively involved in — and I think at this stage it's probably fair to say — evaluating the techniques. People like NASA, as well as the military, have, in fact, brought this technology pretty far along, and are now, as you've heard, are trying to implement it for other kinds of uses. And the U.S. Geological Survey has a very active group evaluating it. There is a consortium of universities, funded by the National Science Foundation, that's also very actively looking at the program, or at this technology. And organizations such as JPL, in Southern California, are also looking at it.

So, we have fundamentally several important groups of scientific and technologically capable groups in the country now evaluating it and beginning to put it to use. I think it's probably fair to say it's not being used in a widespread fashion now, but we're beginning to get the first measurements that are being compared with standard geodetic techniques to — to assess its usefulness. And I think the consensus now in the community, in the scientific community, is that it, in fact, is going to be, if not already, a very viable type of technology for primarily horizontal crustal movements, although the vertical element will probably come in as well down the pike.

CHAIRMAN CLUFF: Tom?

DR. McEVILLY: I'd like to show you three or four pictures of what really impressed me when I started getting into the GPS capability. And I was working with one of the commercial outfits, Litton Industries, their Air Services Group, who actually has installed a global positioning system for the Japanese government. And I understand they are now purchasing 50 more sensors on the basis of the data that they just got this fall on a volcanic eruption. So, I think it illustrates the use in the geological hazards monitoring.

CHAIRMAN CLUFF: Sure. Go ahead.

(The following remarks were accompanied

by a slide presentation.)

DR. McEVILLY: In the south of Tokyo — oh, good, it works — I was worried — south of Tokyo is an extremely hazardous Izu Peninsula zone in Japan, which is expected to have a magnitude 8 earthquake. And the Japanese have an extremely active earthquake prediction, earthquake monitoring, and geodetic program throughout the islands.

Last year — or, this year — spring of this year, they installed a network of these fixed global positioning system receivers, specifically to monitor the horizontal deformation, relative deformation, over this zone, where the large earthquakes are expected in this area.

Now, in the process, they had a suboceanic volcanic eruption, which was a very nice test of the system.

This is — this is the area of the previous figure. This is the Izu Peninsula. This box is this lower box. Two of the GPS stations are HTS and ITO, that are approximately 15 kilometers apart. The volcano, the eruption that I — subsea eruption I referred to, is just here, off the coast (indicating). And this is the coast of the Izu Peninsula here.

The data that were acquired with the system — what I'm going to show you is the relative position between the two stations, in other words, the position between ITO and HTS, which is what these things do, you know, they give you, very accurately, the relative position of the two receivers. Using the satellite constellation every time it comes across, you can get a fix.

What's plotted here is May to July this year, May 20 to August the 1st, actually. The heavy arrow at this point is the eruption. The dots along here are the north-south component of change in position between the two sites. For May, June, up until July 1st, the north-south relative position and the east-west relative position are stable to approximately a centimeter with these measurements.

About — about two weeks before the eruption, the ITO station started sailing south, relative to the HTS to the north, and it's possible with these instruments to watch these two islands move away from one another, being forced away by the impending eruption, which hadn't yet occurred. Midway into this, the earthquake swarm activity began, associated with it, and two weeks down the line, after they had moved approximately — approximately 10 centimeters, 15 centimeters apart, the eruption occurred.

So, this — this sold me on the concept that we really are there, as far as using this system in — in monitoring the crustal deformations at sub-centimeter resolutions.

I was giving the people at Litton a hard — and these guys are the experts in this, but I was giving the folks at Litton a hard time on an absolute measurement of the capabilities of this, other than the empirical one that we saw here. So — they're in Houston — so, they put a spiral array of these around their plant in Houston, not fixed — they went out and measured them, so, you know, you've got to locate. If you're going to do a millimeter resolution, you've got to put that antenna within a millimeter each time.

So, they went around and surveyed these in the last few months, and it gets a little technical, but what we're going to look at are the individual — in the inner loop, the individual triangular distance between — between sets of three of these. And the interesting point is that — that it's possible to — these are millimeters, and these are the various stations — the various triangles of stations are hooked up by the dotted lines. But this is repeated measurements, several independent positions, relative positions in the triangles, done over several weeks' time, of bringing the instruments in and going back out to put them in and making the observations, coming back in and going back out again.

It's possible to fix that array to easily, within 5 — plus or minus 5 millimeters of the relative positions of these, just on — not a fixed installation, but going out and carefully installing the instrument in the same place again and again.

So, I don't think there's much question any more but that the deformation is ready for a GPS measurement capability, rather than the two-color laser and the shadow light, and mainly because it's so easy. You can put these things in a fixed mode cheaper than having people run around — you know, hiring a whole team of people and do it. And you can telemeter the results, just like a seismograph. You can — you can bring in the — every time a constellation goes across, you can get a fix on the site, and you have in your data base, that was Part 3 of this recommendation — you have in your data base the absolute positions of all these points, all around the monitoring area, be it the state of California, Sierra Nevada, the Hayward Fault, whatever it is. And very quickly, you can see a few millimeters of motion.

And those are — relative to the tectonic deformations that Tom mentioned earlier, you're being able to say, within a RMS of — you know, root mean square measurement of a millimeter or two, where those points are, in a matter of weeks, months at worst. You actually begin to see the plate motions and the loading of the various faults.

So, this is exciting, I think.

CHAIRMAN CLUFF: This is the technique that Tom Jordans been using in his —

DR. McEVILLY: Yeah.

CHAIRMAN CLUFF: Yeah. Well, I have a whole list of questions for Tom, both Toms.

But why don't I let the other commissioners take a whack? I'm sure Commissioner Bolt has a few.

COMMISSIONER BOLT: Well, it's always pleasant to get some seismology here at the Commission, Mr. Chairman.

I'd like to ask Mr. Henyey about the Southern California earthquake center that he mentions in his summary. Is that now in a position to start supporting the development of a system of the kind that you put forward to us? And also in here, you don't say anything about budgets, I don't think. Do you have some idea of what kind of funds are needed per year for the next five years, to get something worthwhile established?

MR. HENYEY: Professor Bolt, I assume, in talking about budgets, you're referring to budgets for monitoring the thrust faulting?

COMMISSIONER BOLT: Yes.

MR. HENYEY: Well, let me take the center question first.

We mentioned the Southern California earthquake center because that is an activity which we believe is going to get off the ground fairly soon. We think it has broad support in Southern California. It has support within the U.S. Geological Survey, and there is evidence — there's some suggestion that the National Science Foundation may be viewing it favorably, through their Science and Technology Centers Program.

We're proceeding ahead with the notion that within the next year or so, that this activity will, in fact, be a going concern.

This center is based around the notion of a master model which is an attempt on the part of the earth science community to put everything together that we now know about earthquakes, into some sort of a consensus, and into a form that can be applied in the real world, as we like to say, that is, it can be used by engineers, by public planners, by emergency response people, and so on, with respect to — respect to the earthquake problem, namely, earthquake forecasting, not only when and where a quake will occur, but also with respect to strong ground motions.

This kind of activity I talked about with respect to the Elysian Park Trend is the kind of activity that would fall within the interests of such a Southern California earthquake center, in fact, has been factored into our proposals regarding the center.

With respect to budgets for our study of this structure, I did put together a view graph today which I didn't — I didn't show, which had some numbers on it. I think we're talking about something very similar to what Tom is talking about.

COMMISSIONER BOLT: Could you show us that?

MR. HENYEY: Sure can, surely.

CHAIRMAN CLUFF: While you're looking that up, is this center the one and the same that Kay Aki has been leading?

MR. HENYEY: That's correct.

CHAIRMAN CLUFF: Okay.

MR. HENYEY: And Kay is the — is the driving force behind this. And as I told Tom on the way up here, I'm the guy that flies up to Sacramento and does some of the — we've been working very hard jointly on this.

(The following remarks were accompanied
by a slide presentation.)

MR. HENYEY: The length of this trend is not much different than the length of the Hayward Fault, from, say, Hollister to San Pablo Bay. So, some of the numbers here are probably not far different. Our cost figures may be a bit different than Tom's costs, the way Tom's costed out the Hayward Fault.

We would like to include some broadband stations in the peripheral areas around the Los Angeles Basin. We would like to have a portable array of strong motion instruments that can be taken around the basin to study strong ground motion characteristics for design earthquakes or actual earthquakes. I'm talking about here portable GPS receivers, as opposed to permanent ones.

Now, I — I am a novice at GPS. I don't know the relative merits of permanent stations versus portable stations. Portable stations clearly take a crew to operate.

In addition, we would add additional stations, short-period stations. I think we used the number 40 here, as Tom did.

The — one aspect of this proposal is that it — in putting it together, I assumed the existence of the Southern California center. So, we're looking here really at dollars for procuring instrumentation. And the center, then, would be the organization that did the basic data reduction and scientific interpretations and technology transfer.

So, we have not factored those numbers into this kind of a proposal, although I put an annual operating budget here. Since this is significantly more instrumentation than we had proposed under the center, we would have to have somebody who takes care of these things. There's a significant activity here in taking care of —

CHAIRMAN CLUFF: That number's kind of shady. Can you tell us what it is? I can't quite —

MR. HENYEY: Well —

CHAIRMAN CLUFF: — read it from here.

COMMISSIONER SNYDER: A little white-out there.

CHAIRMAN CLUFF: Aha! I didn't think that was intentional.

(Laughter)

MR. HENYEY: I think what we thought here was something on the order of $3 million in instruments, and about half that to take — per year to take care of them and do a certain amount of basic data handling, with the center then doing the scientific work and technology transfer.

COMMISSIONER BOLT: Well, thank you. Could we have that in the testimony, the first plate? Would you leave that for us?

MR. HENYEY: Yes, I will.

CHAIRMAN CLUFF: You had further questions?

COMMISSIONER BOLT: No.

CHAIRMAN CLUFF: Any other questions before I take a whack at some?

(No response)

CHAIRMAN CLUFF: Tom McEvilly, you mentioned that your understanding was that the main active faults are well known, and clearly, you picked, in your judgment, the one that's most important, to monitor the Hayward Fault. Could you just tell us the names and the locations of the other faults?

DR. McEVILLY: Well, I would probably fall back on the probability study, but there would certainly — considering — considering the population and the material at risk, I think I would go with the Hayward and the Elysian Park Trend as the two major items, with the — with the northern part of the southern peninsular segment, you know, north of Loma Prieta, as a — as hanging in there also as a high priority.

CHAIRMAN CLUFF: Um-hmm.

DR. McEVILLY: And then we'd go to the high-probability section — I don't know what Lynn and what the — referred to it in the southern — the southern stretch of the San Andreas, over around the San Jacinto —

CHAIRMAN CLUFF: Coachella Valley?

DR. McEVILLY: Yeah, Coachella, right. Um-hmm.

And then I — those would be my top four, right off the bat. And I don't know that we'd probably find some argument for another couple. But I think those four ought to systematically be looked at.

CHAIRMAN CLUFF: Okay. And this is what I wanted to address, was the convergence on the point that Tom Henyey presented. You — all the others are single-source, and the one that Tom has presented is a zone of convergence that — I don't know how many faults — would you say twenty or thirty or who knows?

MR. HENYEY: Yes. I think "who knows" is probably the answer —

CHAIRMAN CLUFF: Yeah, because part of the question —

MR. HENYEY: — because it's a stack of — there's a stack of faults.

CHAIRMAN CLUFF: Right.

MR. HENYEY: But I think, from oil company data, we know that there are — there are stacks of three and four of these, quite commonly, along the trend, which is perhaps, oh, 4 or 5 kilometers wide.

CHAIRMAN CLUFF: Yeah. And so, having been a member and still a member of the reconvened Working Group on Earthquake Probabilities, let me just give you some insight into how we dealt with that problem.

And it was — it was one in which, when we had reliable data, if you take one of those faults that you talk about in that Elysian Trend, and it goes off — clearly, if it's coincident with a populated area, it's a problem — but when you look at this probabilistically and you spread those probabilities over quite a wide zone, if you treat the zone, then you might be able to quantify the probability.

But the difficulty was that it doesn't come anywhere near the probabilities, given the knowledge that we presently have. And that's, of course, a big uncertainty of the segments of the San Andreas system, the Hayward, San Jacinto, and the San Andreas directly itself. So, it's a different kind of animal to deal with, and I — I just wanted to point that out. You can't treat these all equally, and we're just beginning to look at them.

Let me — let's see. I think Bruce asked a question that I had.

COMMISSIONER BOLT: While you're thinking, Mr. Chairman —

CHAIRMAN CLUFF: Yeah.

COMMISSIONER BOLT: — may I ask another one?

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: I'd like to ask both the people from the universities whether they — how they see the role of the Commission now, in being able to help them make these plans and mail them to the appropriate authorities in the state so that funding might flow. It's — we may —

DR. McEVILLY: Yeah.

COMMISSIONER BOLT: We may have some ideas on that, and I'd like to know how far they've gone.

CHAIRMAN CLUFF: I think that's a better trend to take on questions. All my other questions have to do with technical things that I don't think we should burden the rest of the commissioners with. And perhaps Professor Bolt and I, in another forum, can get into more of the technical things.

But let's pursue the question from Commissioner Bolt.

DR. McEVILLY: Well, I'm a — I'm a little appalled to hear that there will be between 500 and 1,000 bills generated by the earthquake, so I don't know how one does this. I mean, I'm — you're talking about being a novice. All I know is that — is that, clearly, it will have — if the State of California is going to play a major role in installing and maintaining a facility that produces the cutting-edge data, it must be done by legislation of some sort. And I — the way I understand it, that has to come out of some agency or somehow. And I don't know how.

It's your —

COMMISSIONER BOLT: My job.

DR. McEVILLY: It's your job.

(Laughter)

MR. HENYEY: Maybe I'll just state a point here. It's quite — it's become quite clear, I think, to me, that the Seismic Safety Commission is regarded as the spokesgroup for the — for earthquake questions in California by the — by the legislative process here.

Talking with legislators — I've talked to people in Southern California, for example, Assemblyman Katz, certainly Senator Garamendi, our own council people, Hal Bernson, whom you all know — and virtually everybody one talks to, it's quite clear that the Seismic Safety Commission is pivotal to their thinking. That is, they're going to come to this Commission for advice on what to do.

Now, that doesn't speak to the issue of generating bills. We tried, last time, after the Whittier Narrows, to go through our own Southern California person, and I don't know that that's the way to do it. My feeling is that we've got to come to some sort of a consensus, I think, probably with the Commission — Commission's help, as a consensus statewide, and then we have to work with the Commission to determine how we're going to develop the legislation to sponsor these kinds of activities.

But, again, I want to emphasize that the Commission, in the eyes of the legislative process here, is a very important entity.

CHAIRMAN CLUFF: Let me —

DR. McEVILLY: If I may add to that —

CHAIRMAN CLUFF: Yes.

DR. McEVILLY: — I think Garamendi made it very clear in the hearing in Pasadena that — that the opinion of the Commission was terribly important, second probably only to some sort of a union between north and south.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: Just to follow up on that a little bit. In terms of our helping you, it would be good for us to see just exactly what your perspective is. And one area, I think, would be helpful in that — I would just like to ask this question of both of you — what would be your response if you were asked, "What is the primary benefit to seismic safety in the State of California if we would implement both of these proposals?" How would you answer that? It would help us to see what your answer would be, as we try to help you.

What's going to be the direct benefit to the citizens of California in terms of their seismic safety from the implementation of these proposals?

DR. McEVILLY: Right off the top of the head, I see three. One of them, which is not inconsequential, given the — given the heightened awareness of — if you will, of the population of this state — is peace of mind that the State of California is, in fact, doing something that a body of knowledgeable people think should be done. I think that's not to be lost in the process of serving the state.

Secondly, I think, in the case of the Hayward Fault, for example, I think a lot will come from the — from a better knowledge of that stretch of the fault segment in terms of the prediction of the damaging strong ground motion.

I really think we have a problem knowing how to model that source, because we don't know what the — what the rupture is going to end up looking like. And since it goes right through the zone, right through all the — all the Cypress structure, you know, along the full long of the coast of the bay shore, we need to know with a lot more resolution where the fault will run, where the rupture will run.

So, I think — I think there's a real possibility of being able to develop some damaging motion templates that will allow us to be a little more systematic in addressing the structural questions.

And thirdly, there's a darn good chance that we may get some — some predictive warning of the earthquake.

CHAIRMAN CLUFF: That kind of brings you back to your first point. That may kind of deter or take away from the peace of mind that some people might have gotten out of this program being in.

DR. McEVILLY: Well, they'll have peace of mind until it's time.

CHAIRMAN CLUFF: Yes.

Dan?

COMMISSIONER IWAN: Well, I would like —

CHAIRMAN CLUFF: Oh, I'm sorry. Excuse me.

MR. HENYEY: Well, I don't have —

COMMISSIONER IWAN: Thank you, Tom.

Yes.

MR. HENYEY: I don't have much to — much to add. I think Tom covered it quite well. I think the prediction of strong ground motion, based on design earthquakes, is critically important.

I also think, with respect to the Elysian Park Trend, it's important to, through the long-range planning of Southern California, to know whether, in fact, this is a hazardous fault trend.

I think it's unquestionable — well, without question, our knowledge, our improved knowledge of the San Andreas and the probabilities that we've developed for the San Andreas, and when the earthquakes will occur, I think everybody will agree that that's fundamentally important to the State of California.

And I think, to develop a knowledge of structures such as these very faults, as to whether, in fact, they are hazardous — as hazardous as we suspect they are — is a critical question that needs to be answered.

COMMISSIONER IWAN: May I just follow up with one quick question?

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: You talked about the prediction of damaging strong ground motion. That conveys the implication that you feel possibly that current design levels of ground-shaking may be inadequate? Is that implied from what you're saying or not?

Is there some implication here that we may not be designing structures to high enough levels of acceleration, either in the Hayward area or in Southern California, because of these features?

MR. HENYEY: I can't answer that question, Bill. I think that our knowledge of the distribution of strong ground motion in the L.A. Basin may not be known as well as we think it is. But whether that translates into whether we're building structures to withstand certain events, I don't know. I mean, you can always design a structure to withstand a magnitude 9. I mean, I can't answer that until I know how things are being designed.

DR. McEVILLY: Well, I would add that we're not really worried about what you're going to build tomorrow. There are a lot of buildings that are — that are going to be subject to strong ground motion that perhaps it would be nice to have a reasonably — a reasonable confidence in a —in a strong motion prediction, say, for a rerun of the 1836 earthquake.

I don't — I think we can improve on what we can do today in predicting the radiation and the pattern of that source and the resulting strong ground motion. I think — it's your — it's your field, but I think that would be of value. I don't think that it would have a huge impact on the next Hyatt Regency that'll go in at Emeryville, but I think it would have an effect on remedial decisions.

COMMISSIONER IWAN: Thank you.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Yeah. I was just kind of curious. In either one of your proposals, you've mentioned several fault systems, the Hayward and some of the other high-probability faults in the Southern California. I was curious, would any of the faults, or some that could potentially affect the San Diego metropolitan area, be taken into consideration? That's the Rose Canyon, Coronado Bay, Elsinore, San Jacinto.

MR. HENYEY: Yes. The Rose Canyon Fault, I think, would be regarded as potentially the most hazardous strand of all strands with respect to San Diego, the San Andreas aside.

Now, are you asking whether or not there would be plans to look at these —

COMMISSIONER EBERLE: In your proposals.

MR. HENYEY: — in the proposals? As the proposals now stand, there are not specific plans to look at that particular structure.

I — I might add, the plans that we're making — I think all of us are making — are very, very rudimentary at this stage. We don't — I think, if funding were to develop, particularly, let's say, through the Southern California earthquake center — this is something that I'm more closely associated with — then we would take a very hard look at — as a community in Southern California, at what needed to be done in terms of specific faults.

I might add that the Southern California center is very strongly organized around existing data sets, but just simply taking what we now know and translating that into something we feel is usable to the public and private sectors, not just simply scientifically — of scientific interest. But — and so, there may not be a lot of resources to go out and begin studying new faults.

But the hope would be that we could begin to do some additional work on something, some very hazardous structure. And one of the things that would be particularly attractive to us would be to have the state come in as a partner here to assist us in providing instrumentation, if we can then use our resources to do the analysis.

Now, with respect to the faults like Rose Canyon, those would be factored in, along with Elysian Park and the San Andreas, San Jacinto, and so on, and with whatever resources we had, we would try to pick that structure which perhaps is the most useful from the standpoint of what the state and the population need.

So, these priorities have to be looked at a little bit more, I think, in the future.

CHAIRMAN CLUFF: Tom?

DR. McEVILLY: I would envision — the reason that I used the legislature having a mindset of — in supporting this facility, monitoring facility building — I would envision, given the best of all worlds, if there were an ongoing — an ongoing appropriation on a year-to-year basis for the establishment — I rather blatantly crossed out "Hayward" and put "California hazardous fault" — if there were an ongoing program addressing this, that after five or ten years, some sort of a steering committee would be guiding the decision-making on where — you know, the order in which the particularly hazardous faults are instrumented.

And I would see this never stopping. I mean, this is running a — your fire stations or your police or — you know, your emergency services. And in a way, I envision this as almost a responsibility of the State of California, if we can convince people that we know what to do, to just continue to develop and improve and expand the monitoring capability on the earthquake hazards.

So, sooner or later, you'd get to most of the even marginally-hazardous fault zones, I think.

CHAIRMAN CLUFF: Yeah. Dan, let me take a cut at trying to address part of your question, having some knowledge of both areas.

The difficulty is, you're dealing with a fault that has only recently been realized, even though a number of us knew where the Rose Canyon, where that fault was, many, many years ago. It's finally recognized that it is a potentially hazardous fault, and it does go right through the middle of downtown San Diego; it's like the Hayward Fault.

So, you do — from that perspective only, its location and its potential over the long geologic term, it is a high hazard, but when you crank into that the aspects of the likelihood, in terms of the probability of something happening, then the data that we have right now clearly downgrades the importance of the Rose Canyon Fault. And to some respects, it does the same thing to the Elysian Trend, in that the rate of slip, or the rate of strain accumulation across the whole zone, is significant, but when you take this to individual faults, then they go down in terms of their direct potential at an exact location.

So, when you start sorting out priorities throughout the state, these things can come into play. I don't know what the answer is. We need to address all of them. I wish we had plenty of money to do all of these things.

But we as commissioners, and those of us serving on the Research Committee, have really got a difficult problem ahead of us. We've got a whole spectrum of earth scientists, of earthquake engineers, and social scientists that — that every idea that I've heard has a lot of merit, and we ought to be funding all of them. But the State of California is not going to take our entire wish list, and it's going to be a very painful process for us, as a Commission, I think, when we look at all these, to go in the directions that are best for the State of California.

And we certainly appreciate all of you people coming here and giving us this presentation. I think it helps all of the commissioners have a better feel for where things are.

And, Tom, you had some questions?

EXECUTIVE DIRECTOR TOBIN: Well, I have a question that's sort of out to all of you. When you see the array that Professor McEvilly showed of the Izu Peninsula, we realize, you know, how much more the Japanese government does to understand the geologic potential of faults, probably going down to the second or third order, in terms of our own concern. And they're doing thorough studies.

The National Science Foundation has an Earth Science Division that has something like $11 million per year for — that they categorize at least under the National Earthquake Hazard Reduction program. And I have yet to figure out if a dime of that money really is spent on earthquake hazard reduction, or if much at all is spent in California, where the hazard is so real and the kinds of questions that you raise are so profound.

Is the National Science Foundation giving us the support that we deserve to answer the kinds of questions that you've raised for us?

We don't have to write this in the minutes, by the way, your answer to that.

MR. HENYEY: Well, I probably should let Tom address this. He's on a number of National Science Foundation panels. I'm not sure entirely what you're referring to, Tom.

Money in the foundation is — goes to both the engineering section as well as —

EXECUTIVE DIRECTOR TOBIN: So, they have $15 million for engineering, $11 million for earth sciences. And I have yet to really see the earth sciences really, you know, focusing on these kind of priority questions that you two raised.

MR. HENYEY: Well, I don't know the $11 million. Is that a number that rings a bell with you, Tom?

DR. McEVILLY: I don't know that number, Tom.

CHAIRMAN CLUFF: Yeah. That's a — it's a number they like to quote, because they like to get credit for having money for earthquakes. But when it comes down to it, it's crustal modeling, it's all kinds of things that I've criticized them —

DR. McEVILLY: Well, what may —

CHAIRMAN CLUFF: — for trying to —

DR. McEVILLY: Well, what may have happened here is —

CHAIRMAN CLUFF: — count that as earthquake hazard.

DR. McEVILLY: — he may be — he may be going back to the old NEHRP program, Division of Resources, under the original NEHRP program. And as I recall, when the portion of that program came to NSF#(See National Science Foundation), they did a lot of other things to it with that money, other than putting it specifically into earthquake-related research.

MR. HENYEY: Yeah.

CHAIRMAN CLUFF: The number is more like a million or so, when it really comes down to real earthquake issues.

DR. McEVILLY: I think you're probably right.

CHAIRMAN CLUFF: Yeah, because that's the — I can tell you, by having served on an advisory group —

EXECUTIVE DIRECTOR TOBIN: Well, I guess, to start with —

COMMISSIONER IWAN: They get credit for it, yeah.

EXECUTIVE DIRECTOR TOBIN: — they give credit for it, and I look at — there's a, you know, $10 million of federal money that's being misspent, at least according to the way they're — the way they're trying to spend it, and enough to really begin these projects.

And, you know — and I guess the other question I have is, you know, both of you mentioned the GPS relevant to what you're working with and the people here from NASA. And I'm afraid that in terms of — I don't know if this now drops through the cracks, in terms of, you know, the three of you working together, or whatever, in terms of how, you know, the Commission might follow up, or we've done all we should do on this.

At least I'd love to see NASA's full involvement and, you know, budget also applied to this, just like, you know, all of ours.

MR. STETINA: Well, I have a comment here. I shouldn't criticize the Commission, but in the last ten minutes, you've been very parochial trying to solve your specific problem as to how to get these universities to tell you how to get their proposals funded. And you specifically talked about California, California, California, and just these last ten seconds, you've talked about the national thing.

But anything that affects California affects anybody, including me, because I — you know, if you have a disaster here and can't predict something, I have to pay for it, like the rest of you. So, it's not a California issue; it's a national issue. And the Seismic Commission, I think, has enough influence to address the national funding agencies to help resolve some of these things, and especially now, bring attention to it, ask NASA for help, ask U.S. Geological Survey, at headquarters, for help, ask the National Academy of Sciences for help in, if nothing else, evaluating your own proposals.

So, I think it's — it's your responsibility to ask for the national agencies to help, and I think they would be willing to help.

CHAIRMAN CLUFF: Yeah. You're probably not up to date on all the things that have happened. There are at least four commissioners here who have given testimony at the congressional hearings over the past few years, including our executive director, and as well as a number of us serving on national committees advising the NEHRP and so forth.

So, the Commission, individually and collectively, commissioners are deeply involved and concerned, and we have all stated the concern that Tom was expressing, in that people seem to like to take credit for money they're spending on earthquake hazard issues, when, in fact, they're kind of double-counting and they're really not putting that money into what I call real earthquake hazard problems.

MR. STETINA: Well, I think this could be brought up in a more — to a more enlightened audience to do that, to not double-count.

CHAIRMAN CLUFF: Well, it has, and three of those individuals are no longer at those organizations. So, it has made a difference.

MR. STETINA: Okay.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: Mr. Chairman, a small question of NASA.

The comment was made that what's needed is to get the price of these things down, the stations, from $35,000 to $1,000. When's that going to happen? When will that be the case? When can we buy these for $1,000? Do you have any idea?

MR. STETINA: Well, I think — I think the question you have to ask first is say, "Boy, these are very expensive things; isn't there a way of getting them down?" Once you — once you make that statement and ask the manufacturers to — once you address the manufacturers and say, "We need 100 of these, but we're not paying $35,000, the program's going to die, we're not going to do our job, and you guys are trying to gouge us too much."

$35,000 is paying for all the research and development that's taken place over the years, so it's the users that have to say, "This is outlandish. I understand what this technology is and how much it should really cost, and you guys are charging me too much."

So, that's what has to happen, the users.

Now, NASA as a user is saying that, and we're saying, "Hey, manufacturers, we're willing to even put in some R&D bucks to get this down, and we're willing to do some in-house capability to get this down." But the community as a whole has to stand up and say, "These things are not that high-tech any more" — they sound like they are, but they really aren't — "Come on, manufacturers, quit gouging us."

That's what the users have to say.

COMMISSIONER IWAN: And how long will that take?

MR. STETINA: If we — we talked to manufacturers that said the $3,500 device could be made for $100 today.

CHAIRMAN CLUFF: Well, we need to move on. And we thank all three of you and the other speakers that the NASA people brought here for coming and talking to us, and we look forward to continue the working relationship to, hopefully, get some funds from the State of California to support some of these activities.

DR. McEVILLY: Thank you for inviting us.

CHAIRMAN CLUFF: I'm going to take up — make a little change in the agenda. The committee reports are going to shift till the afternoon. Before lunch, we're going to take up the executive session of the Commission, so all individuals who are not part of the Commission or the Commission staff are kindly excused. And you can either go on your way or go to lunch and come back.

We will be back here — I think, given one of the speakers this afternoon, the first one, not being available, we will reconvene back here at two o'clock. So, we'll take up the committee reports and then move in at 2:05 on to the Loma Prieta hearings.

So, if we could have everyone else vacate the room, and we'll go into our executive session.

(Thereupon, the meeting was adjourned to
executive session, to be reconvened after
lunch at 2:00 p.m.)

—oOo—AFTERNOON SESSION —oOo—

CHAIRMAN CLUFF: We'll call the Commission back into session.

As we left, we were on the agenda item on the executive session, and I'd like to report, for the record, during the closed session, a statement:

X

> "The preceding executive session was closed to the public pursuant to the provisions of Subdivision Q of Section 11126 of the Government Code, so that the Commission could confer with and receive advice from its legal counsel, Timothy G. Cronin, regarding pending litigation concerning the collapse of I-800.

X

> "No action was taken on this closed session, and this shall be reflected in the minutes of this meeting."

The next item will be a brief section on committee reports, and I'm going to call on Commissioner Fratessa to start it off.

COMMISSIONER FRATESSA: I apologize for having to give this report first, but I have to leave at 2:30, and I wanted to be sure that the Commission knew that the committee that you formulated about a year and a half ago as the Design Professional Liaison Committee, we've never reported back to you, not because of inactivity, but we kind of wanted to have something to report.

That committee has met three times, and the purpose of the committee was to disseminate information through other design professionals and other organizations, members of the committee, from EERI, from the architects, AIA, in the State of California, from AGC, Associated General Contractors, Structural Engineers Association, and others, and from the research community — Frank McClure is one it — but the purpose of our meetings have been to review what is happening with regard to the Seismic Safety effort of this Commission and request from those groups matters which they would like to have brought before the Commission, or would like to have information from the Commission on.

Primarily, at this point in time, there's been a nice exchange of that information, and we've reviewed the legislative matters that are coming up before the legislature in January, and it was quite helpful. And there was some information which, for instance, the architects did not have access to, and they raised their eyebrows in a very proper way, and I'm encouraged that they will be in a position then to more knowledgeably support legislation which we might be proposing. They found that interesting.

The other area that is effective, which you've been doing, is that it was through this liaison committee that the effort to get a model ordinance for unreinforced masonry was stimulated, and that is very close to being adopted. So, the liaison committee has been hard at work. We probably will not meet now again for another three or four months.

I'd be glad to entertain any questions, but that's basically what we've been doing, and I think it's been quite effective.

CHAIRMAN CLUFF: Thank you very much.

Dan?

COMMISSIONER EBERLE: The other day, I was talking to Commission McMullen, and he said that he really doesn't have enough to do. So, I thought that it might be appropriate to appoint him to the Emergency Planning and Response Committee, which he has graciously volunteered to accept if nominated.

I would like to move that Commissioner McMullen be appointed to the Emergency Planning and Response Committee.

COMMISSIONER KOCKELMAN: Second.

CHAIRMAN CLUFF: Any discussion on the motion?

(No response)

CHAIRMAN CLUFF: All in favor, "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Carried.

Welcome to committee activities, Jim.

COMMISSIONER BOLT: Mr. Chairman, I would like to know whether he's the state fire marshal, or "m-a-r-t-i-a-l," which our document said this morning.

(Laughter)

COMMISSIONER McMULLEN: I noticed that myself. I thought it was martial law or something.

COMMISSIONER BOLT: Can I get some clarification?

CHAIRMAN CLUFF: Yes.

COMMISSIONER McMULLEN: I've seen it misspelled with two "L's" too often, but I've never seen it spelled with "martial" law connotations.

(Laughter)

CHAIRMAN CLUFF: Other committee reports.

Stan.

COMMISSIONER SCOTT: Yes. I would like to proceed to — sort of to the appointment phase of the new, reconstituted committee on the architect's role in earthquake hazard mitigation. You'll recall the Commission adopted the report of that first committee at the last meeting, and asked me to chair a new or reconstituted committee, and told me to get going on getting names and that sort of thing.

So, I — this is my interim report. I checked with all the members of the old committee that's being — will go out of existence, and most of them, I was kind of surprised but very pleased to note, are willing to continue or to serve on the new committee. So, I would like to read these names and get these appointments made, with the understanding that we'll probably get this group, this initial group, together, and then plan a new charge — it's going to — it's going to be a new game on implementation, and also, the earthquake has happened, really, since — since our report was put together.

So, let me read this name — these names, and I would ask that — and I would then move that these members be appointed.

You asked me to chair it, and then Robert Hench, Paul Welch, Richard Eisner, Christopher Arnold, Eric Elssesser, Paul Neal, and Henry Lagorio. I would move that they be appointed.

COMMISSIONER FRATESSA: Second.

CHAIRMAN CLUFF: Any discussion or questions?

(No response)

CHAIRMAN CLUFF: All in favor, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

Other committee reports? Any further — Will?

COMMISSIONER PEAK: This is a future item. I just wanted to note that the Strong Motion Instrumentation Advisory Committee is meeting next Tuesday, and we're meeting at the San Francisco — in the San Francisco Airport area, to get out of Fog City, but —

CHAIRMAN CLUFF: Good luck. It's been foggy down there.

COMMISSIONER PEAK: We can get fog down there.

And that's Tuesday, December 19th.

CHAIRMAN CLUFF: Any further reports?

(No response)

CHAIRMAN CLUFF: Okay. We'll move back to the continuation of our Loma Prieta earthquake hearings. This is continued from the November meeting.

We have a full agenda, although I understand a couple of the presenters have not been able to make it, and I think the first one shown, Linda Fain, Department of Mental Health, and, Tom, you had a quick comment to make with regard to that.

EXECUTIVE DIRECTOR TOBIN: Yes. Linda Fain sent us a letter explaining why she couldn't be here, apologizing that she was unable to make, but she's busy full-time at the disaster field office in Mountain View at this time, working on mental health issues, and has an extremely important presentation that's due in a day or so, and she thought it was best that she stay there and finish what she's doing. And I agree, and Linda was terribly sorry, and she'll be at our next meeting. And I think we can all look forward to her presentation then.

CHAIRMAN CLUFF: Thank you very much.

The next speaker is the state fire marshal, David Walizer.

Welcome to our meeting, and our procedures in the past hearings that we've had is for each speaker to, very briefly, let us know what their involvement was with this earthquake, what worked, what didn't work, and how we can improve the process, and how we as a Commission can work together to improve the kinds of seismic safety things that you do.

MR. WALIZER: Thank you.

Again, my name is David Walizer.

CHAIRMAN CLUFF: Oh, excuse me.

MR. WALIZER: I'm the assistant state fire marshal, and I want to thank you on behalf of the fire marshal's office to have the opportunity to be here today.

As you know, the fire marshal's office is an emergency response agency. And when the earthquake hit on the afternoon of October 17th, it was quite obvious that we had a major event occur within the State of California. .

We have a certain responsibility to the Office of Emergency Services to provide staffing to the state emergency operating center and to regional operating centers, which we did. We provided staff immediately to the SOC in Sacramento. We provided staff to the regional EOC at Pleasant Hill, and we put our staff on 12-hour shifts immediately, and we began putting together an operational plan as to how we were going to handle what appeared to be a major emergency, as far as state buildings, prime jurisdiction of the state fire marshal occupancies that were in the Bay Area.

After we provided our immediate response to OES, we then set up two of our own emergency operating centers. We had one in Sacramento, and then we set one up in our San Leandro office, which, of course, is right in the immediate area of concern.

We, as in past practice, have operated under the incident command system, which provided the management tool for us and, as you well know, probably, throughout the fire service in California, through that program. But this gave us a way of really operating and managing our resources, both manpower and equipment that had to be utilized for our response.

One of our major concerns was the acute-care hospitals in the affected area. We immediately, with the Department of Health Services, the Office of Statewide Health Planning, and the Office of the State Architect, set up four-person teams that went out and tackled the job of immediate emergency inspection of 64 acute-care hospitals in the Bay Area.

After those first 64 facilities were examined, we then went into 352 skilled nursing facilities, 72 state-owned buildings, 48 state highrise buildings, 42 local schools, 48 local jails, and 13 state buildings that had already been closed due to the immediate emergency. We conducted, with these teams, 638 inspections within the first three days of the emergency.

Additionally, after that immediate concern and inspection, especially of the hospital facilities, we then fanned out into the more farther distant areas, or the areas that appeared to be less impacted by the earthquake, where we inspected the rest of the state buildings, the schools, jails, prisons, and other similar public occupancies. These were then completed within the following five days of the emergency.

An unusual occurrence for us did occur, in that about October 21st, several days after the incident — as you're well aware, the fire service in California has a statewide mutual aid plan that provides assistance and mutual aid resources to each other throughout the state. That plan is basically designed for suppression and rescue type operations. We received a request from several local entities in Santa Clara and Santa Cruz County for assistance in fire and life safety prevention inspections.

Now, this was kind of a new mode for us, because it's almost like a nonemergency type process, when you're looking at a straight fire and life safety inspection. This type of response or request is not, and has not been, dealt with in the past in the mutual aid plan. So, accordingly, that is one of our charges now, is that we are working with the Office of Emergency Services and the fire and rescue mutual aid plan to develop some sort of mechanism to be able to provide the resources for fire life safety inspectors after the fact of, and after the emergency.

So, this was kind of a new role for us.

We put about 90 people, 90 deputies, state fire marshal staff, into the field during these periods of time. We have four task forces of varying size, from five to ten persons each, that provided assistance to local agencies, for instance, in the Watsonville and Santa Cruz areas.

The locals were requesting the inspections mainly because they were trying to determine the status of the building prior to allowing reoccupancy. So, therefore, it was a certain amount of urgency required, and it was beyond the scope and the capability of these local agencies to do. We provided that assistance through November 3rd, so approximately two weeks, we had 90 or so people in those Santa Cruz, Santa Clara Counties.

As an example, in the City of Santa Cruz, we handled 359 inspections and surveys of some of those buildings. Some of those buildings, and especially in Santa Cruz, the one in particular that comes to mind is, the Lipton Company has one building that's 7 acres, under a roof. You know, that's not the type of building that you just walk in and inspect in an hour or so. That particular building had 11 separate fire sprinkler systems in them, major water supply, and et cetera.

That type of a facility is something that would normally be inspected probably over a period of several weeks. And trying to go in there and do that in a shorter period of time so that that business could get back in operation and allow their employees to come to work was critical, critical to them and critical to the community.

Another example was in the City of Watsonville, where they had major residential structural failures. In that city alone, we did 1,467 residential inspections to determine habitability. The Central Fire Protection District, which is also in Santa Cruz County and adjacent to Watsonville, we had 192 separate facilities in that location.

Another Central Fire Protection District in Santa Clara County, which is in the Los Gatos area and that general vicinity of Santa Clara County, they requested specific inspection assistance to do schools. And so, we did 41 school buildings, including the six Stanford buildings. For a period of about three weeks, we did a total of 2,713 separate facility inspections, again, with about 90 field people providing that assistance to the locals.

Another area that we were involved in, of course, is hazardous materials. As you're well aware of, the state fire marshal has prime jurisdiction for hazardous liquid pipelines. There were eight pipelines that — from various suppliers that run into the San Francisco Bay Area. Our primary concern, and, of course, with the San Bernardino incident fresh on our minds, we immediately had people respond to each one of the operators' control stations in the Bay Area. We shut the pipelines down. Those facilities were shut down for several days, until they were thoroughly inspected, and in some cases hydrostatically tested.

And specifically, a couple of the lines that go through the bay itself, running from, oh, the Oakland area and cross over to the San Francisco Airport, those lines were shut down and then hydrostatically tested to — slowly brought back up to their operating pressure. We had no problem. Those lines, surprisingly, stood the earthquake very well. There was no reported leaks, no reported breaks or spills, dealing with the actual pipelines.

We did have a major incident at the Union Oil refinery in Richmond, where they had 400,000 gallons of unleaded gasoline spill from two ruptured storage tanks. However, their on-site prevention methods that they have, which include berms built up around those tanks, contained all of the liquid. And fortunately, we did not have ignition. The plant fire department provided a foam blanket to put over the top of the fuel, and it never did ignite and was eventually pumped out of the berm area and contained.

I think Chief McMullen has previously provided you a document that the National Fire Protection Association has put together based on their immediate response and our assistance to them during this investigation of mainly the fire and rescue efforts, and that will be ongoing. They are planning to further develop a more comprehensive inspection and document, basing the whole fire scenario as it applied in the Bay Area during the emergency.

Again, I'd like to re-emphasize that one of the areas that surprised us was the request for local assistance of fire inspectors. It's just something we had not encountered before, and we had not planned for that. And it was a very good lesson for us, and it's going to provide us a way of building that into the fire and rescue mutual aid plan now.

And it's very similar to what the structural engineers have already with OES, except theirs is a volunteer program. We're going to put this particular one right directly in the mutual aid plan and identify these inspectors. Since the state fire marshal already certifies all the fire and life safety inspectors, we have a handle on who they are and their qualifications. So, we'll be able to identify those folks and have them already listed and ready to run the next time we have an incident where — that we may need that type of thing.

Utilization of the incident command system proved to be extremely beneficial, and that's really the only way to manage any kind of resources or logistics in an incident of this size, or of any size. It can be used both in the field and can be used also to operate your emergency operating center.

We received a lot of support from fire service agencies throughout the state offering assistance, and even out-of-state and out-of-country. We received calls from all over the world, wanting to send urban search-and-rescue teams. And surprisingly, you know, they were handled very well on a local level. Those requests for assistance were not needed from out of the state. I think we did very well. I think the fire service as a whole in California responded magnificently.

Obviously, this was not an incident of the magnitude of the big one that we've all prepared ourselves for, and I was a little surprised, personally, on how well — or that the incidents occurred and seemed to be more localized. For instance, the Oakland incident seemed to be handled pretty much within the City of Oakland. The immediate response, maybe from a couple of adjacent cities, was, of course, very beneficial. But looking for the large-scale mutual aid response, it just didn't materialize. That kind of surprised us, I think.

I'd be glad to answer any questions that the Commission may have.

CHAIRMAN CLUFF: Thank you very much. I have one question.

You mentioned the hazardous fluid pipelines. Could you just describe where they originate and what their extent and so forth? Where do they traverse the area?

MR WALIZER: Well, these — there are eight basic major lines that run throughout the Bay Area. Some of them come clear from Bakersfield, from the oil fields in Bakersfield, Kings County. They're pumped northward along the west side of the San Joaquin Valley. They go into the Richmond-Martinez area, where the product is refined there.

CHAIRMAN CLUFF: Oh. So this is the petroleum products lines?

MR. WALIZER: Right.

CHAIRMAN CLUFF: Okay. I thought there was something else more hazardous than that.

MR. WALIZER: Well, it could be. They pump a lot of products.

CHAIRMAN CLUFF: Oh, do they?

MR. WALIZER: It could be — they're generally hydrocarbon-based products.

CHAIRMAN CLUFF: Right.

MR. WALIZER: It could be gasoline, it could be jet fuel. The lines coming out of the refinery that go south, out of Richmond or Martinez, there's a line that feeds jet fuel to the San Francisco Airport.

CHAIRMAN CLUFF: Yeah, right.

MR. WALIZER: That's where they get all their fuel.

CHAIRMAN CLUFF: Okay. I'm familiar with those. I thought it was something that — Dan?

COMMISSIONER EBERLE: Go ahead.

COMMISSIONER McMULLEN: Well, just as a clarification on that —

CHAIRMAN CLUFF: Sure.

COMMISSIONER McMULLEN: — you might want to clarify that the same lines could carry different products.

MR. WALIZER: Yes. That's — yes. It could carry anything. And besides crude oil, of course, you could have an ecological disaster if one of those lines had broken in that — along the bay there somewhere. Some of them are on the surface, some of them are just immediately underground. We could have had a major incident ecologically in the bay. And fortunately, we just did not have that problem.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Yeah. I appreciate your comments on the ICS system. I certainly agree that that's the way to manage disasters, and the incident command system is certainly well known in the fire services. Do you have any observations of how non-fire agencies seem to integrate into the ICS system, or did you have any observations, or can you shed any light on that area?

MR. WALIZER: It works very well. The system is very simple. It's just a matter of really learning terminologies and providing some guidance, you know. In our operations, for an example, at our EOC, we used some of our clerical support staff that had never been exposed to the ICS system, and it took them a little bit, but pretty soon they picked up the terminology and the system, and we had the manuals available, and so there was a little on-the-job training, so to speak, and we got them up to speed.

And that's another issue that, of course, we'll address within our internal plan now, is to provide ICS training for every employee, not just our emergency response people.

COMMISSIONER EBERLE: I'm thinking of people outside of the fire services completely —

MR. WALIZER: Um-hmm.

COMMISSIONER EBERLE: — like the law enforcement or the medical. Did you observe how they fit into the system?

MR. WALIZER: They worked very well into the system. And, of course, the law enforcement community is just now becoming very involved in the ICS system. They have some police officer standards and training courses now that have been developed dealing specifically with ICS. CalTrans is getting involved. Some of the other state agencies are getting involved, and, of course, state forestry has been heavily involved for years. The medical profession, the emergency medical response agencies, of course, are very closely aligned with the fire service, and so, therefore, it spins off upon them also.

But it's been very good.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Bill.

COMMISSIONER KOCKELMAN: Chief, what diameter are those lines coming into the Bay Area?

MR. WALIZER: Well, they vary anywhere from 80- to 14-inch.

COMMISSIONER KOCKELMAN: And how often do you have low-pressure shutoff, automatic shutoff lines on those?

MR. WALIZER: Well, I couldn't tell you exactly the distance. There's a certain mileage, based upon the size of the line and the size of — the pressure that the line is operated under. Each line is different.

COMMISSIONER KOCKELMAN: They didn't lose any of those in San Jose or Watsonville or Santa Cruz?

MR. WALIZER: No. There was no lines into the Watsonville-Santa Cruz area, but there is a line that goes into San Jose that comes down the East Bay, from the Richmond area.

COMMISSIONER KOCKELMAN: And no problem?

MR. WALIZER: No problem at all there.

COMMISSIONER KOCKELMAN: Thanks.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. A couple of the recommendations from FEMA, in their draft report, relating to hazardous waste, included inspecting underground tanks after earthquakes, and also having some seismic standards for hazardous waste facilities, which would include tanks and pipes.

MR. WALIZER: Um-hmm.

COMMISSIONER PESTOR: If the state was going to push this, some seismic — so-called seismic standards for these hazardous waste facilities, what agency would begin implementing that? Is that your agency's responsibility? You were mentioning these pipes near the airport, and we barely avoided a catastrophe, and so on and so forth. What can we do to make sure that those pipes are safe, so that they won't break when we have a major earthquake?

MR. WALIZER: Now, if we're talking about pipelines, pipelines, of course, are our primary jurisdiction. Underground tanks are not. Underground tanks are the Water Resources Board and local jurisdictions. We do not have any involvement with them. Obviously, they have to be looked at as to how they'll respond under an incident of this magnitude or greater.

The pipelines, again, as I mentioned, surprisingly did very well.

COMMISSIONER PESTOR: Well, what can we do to make sure that they continue to do well? And if they — you know, if it's surprising, then it seems like it might not take much more for them to break, I mean, if FEMA's recommending that the state come up with some seismic standards for these pipes.

MR. WALIZER: Well, the pipelines themselves — of course, the industry is very much aware of earthquake and earthquake standards, and there are some standards developed for seismic activity dealing with underground pipelines. The industry, of course, tries to meet those standards. I don't know whether you could increase more — make the standards more stringent, whether they need more automatic valves in them, so that if the — if there is a sense — if their instrumentation senses a leak or a break, that it shuts down in maybe smaller segments? All of those are possibilities that could be addressed.

COMMISSIONER PESTOR: Because, you know, we have the URM law, you know, on the unreinforced masonry buildings that we're going after. And maybe the Commission should look into this a little bit more. I know we addressed it in the meeting in San Jose, but if we need to go back — require the utilities to go back and improve their lines so they don't break, just like they did in the Marina area, or like they almost did down in the bay, and if we have to go back and start retrofitting those, because that could be a real major catastrophe.

MR. WALIZER: The pipeline industry is, again, very cognizant of their responsibility and very — tried very much so to meet that responsibility. And these lines are all very heavily instrumented, and they can tell instantly when they have any kind of a problem with that line, either by low pressure or by other electronic means. And they have these valves, automatic valves, throughout the system. Hopefully, if there was a rupture, it would be of a small size, as far as quantity of product.

They seem to be well on top of their problem.

CHAIRMAN CLUFF: Excuse me. I remember an incident back in the '70's with regard to the — then the Shell Products pipeline, which I guess isn't operational now because of that landslide, but that was sabotage, where it was exposed there in canyon and was blown up, and it set the whole canyon on fire.

MR. WALIZER: Right.

CHAIRMAN CLUFF: As I recall, it took several hours for them to shut that facility down. Is that — those kinds of things been recognized?

MR. WALIZER: Yes, very — very much improved since that day. We became involved in the pipeline program in 1984, '83-84, and since that time have put considerably more stringent regulations upon the pipeline operators as it deals with flammable hazardous liquids, and more check valves in the system, again, more automatic valves, more monitoring of the systems, electronics.

COMMISSIONER KOCKELMAN: Did you have any saiche problems with this fuel sloshing back and forth, as opposed to the structural failures in the tanks? Even if it's not in your jurisdiction, did you hear of anything?

MR. WALIZER: The only two that we're aware of are these two large tanks at the Union Oil refinery, there at Richmond, which did split. They didn't completely fail, but they failed enough to where they leaked all the material out.

COMMISSIONER KOCKELMAN: Were these full tanks?

MR. WALIZER: Yes.

COMMISSIONER KOCKELMAN: Yeah.

CHAIRMAN CLUFF: Bill.

COMMISSIONER IWAN: I'[d just like to follow up your comment. You sound like you're very optimistic about all of the shutoffs for pipelines and so on. I think of what happened recently in San Bernardino, and that — what happened there? The system didn't work, or what? I mean, we had testimony that some of the automatic systems didn't work, and even some of the manual systems had not been exercised, and when they went to shut them off, they didn't work either. Could it be that we're overly optimistic about how well these things will work, just because they haven't been tested?

MR. WALIZER: Well, of course, we require a certain amount of testing. That particular line had a failure of a check valve. It didn't close like it was supposed to on the — on the downhill side of that line coming off of Cajon Pass. It was a mechanical failure of the valve.

Again, you know, you can plan, I guess, forever and ever, and hope to put in redundant systems as much as possible. Unfortunately, it occurred.

COMMISSIONER IWAN: And it's possible it could occur again. That's the implication.

MR. WALIZER: That's correct. You can only plan for the best.

CHAIRMAN CLUFF: Further questions?

COMMISSIONER KOCKELMAN: When I was an engineering officer in the Navy — the old Navy, obviously — we had something called PM, you know, preventive maintenance, not "progressive" but "preventive." We'd actually tear these things down and rebuild them once a year, after so many hours. Does the industry do anything like that, particularly on these pipes?

MR. WALIZER: Oh, yes. And we require, see, inspections continuously on these lines, that we personally inspect them. We hydrostatically test them. We require checks and testing of all the electronic monitoring systems and all the valves associated therein.

COMMISSIONER KOCKELMAN: And you're signing something, just like you do on an elevator.

MR. WALIZER: That's correct.

COMMISSIONER KOCKELMAN: Thanks.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Just a quick question. You detailed what sounded like really very extensive inspection activity of all kinds of facilities, including, I guess, at least in the Watsonville area, residences for habitability. Now, were all these inspections from the viewpoint of fire safety or lack of fire safety, or did some or many of them include structural concerns?

MR. WALIZER: Yes, that's correct. And that — and maybe is a problem with — I shouldn't say it's a problem — it's just that we are not — you know, our people are not structural engineers, you know. They're fire prevention inspectors.

COMMISSIONER SCOTT: But they did the best they could with the —

MR. WALIZER: They did the best job they could, looking at what they had to work with. And in a lot of cases, they did have some local building officials with them, or something of that nature.

But, obviously, when you see the water heater off of the foundation that it's supposed to be setting on, and those types of structural problems, it's very easy to discern.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Just a quick question. Basically, it's an opinion more than a question.

Back on the ICS system, do you think there's any value of possibly getting the ICS recognized as the official system in California for managing disasters?

MR. WALIZER: I think maybe that already may be in place. The Office of Emergency Services, which, of course, is the state leader in this area, they have acknowledged that. The governor has come out and said that that is the system to be used for managing large-scale or any-scale disaster in the State of California. We are in the process, with some of the other state agencies, in providing that training to those state agencies that are not now involved in ICS.

COMMISSIONER EBERLE: But the governor has come out on that?

MR. WALIZER: Yes, very much so.

COMMISSIONER EBERLE: Good.

COMMISSIONER McMULLEN: Well, just for clarification, he has stated that for state agencies.

MR. WALIZER: Right.

COMMISSIONER McMULLEN: Not stated that for local agencies.

And on that, one of the things that did occur that I wanted to just embellish on what Chief Walizer was saying, and that is on the incident command system, which is normally a field-based system, used for field operations, during this earthquake was incorporated into the emergency operations center. It overlaid, and it with some minor modifications, worked extremely well, inside of the EOC.

And that's been a question on some people's mind.

COMMISSIONER EBERLE: Good.

CHAIRMAN CLUFF: Well, thank you very much, Mr. Walizer, for your —

MR. WALIZER: Thank you, Mr. Chairman.

CHAIRMAN CLUFF: The next presentation will be from the California Public Utilities Commission. Russ Copeland is here.

And welcome, Russ, to our meeting. We're anxious to hear what kind of activities you've been involved in with regard to the earthquake.

MR. COPELAND: I'm afraid I'm guilty of part of the paper-shuffling that goes on in state government.

CHAIRMAN CLUFF: Okay.

(Mr. Copeland distributes copies of document.)

MR. COPELAND: Again, my name is Russ Copeland, and I am the chief of the Utilities Safety Branch of the Safety Division of the Public Utilities Commission.

Immediately following the earthquake, it was the responsibility of my staff to ensure that Pacific Gas and Electric Company wisely exercised its emergency functions to protect life and property and to expeditiously restore services. It's also my staff who, from time to time, attend your meetings, and therefore, it's with interest that I look to the work that you're doing, and I'm pleased that I've been asked to participate.

Today I'd like to share with you our assessment of the recent earthquake and to talk about the program we will be asking the utilities to initiate to better prepare themselves for the next earthquake. Not only will I be talking just about PG&E, but I will try to brief you briefly on all aspects of the commission's jurisdiction, on water, telephone, rail, and electric systems that were affected by the quake.

You should note that the remarks that I have do represent the opinions of the

Public Utilities Commission staff, but not necessarily that of the commission.

First let me address the state of the water utilities. The October quake did comparatively little damage to the water utilities in the areas that are under regulation by the Public Utilities Commission. And the most severe damage included just a dam, the Austrian Dam, owned by San Jose Water Company, and which was in — within 8 miles of the epicenter of the quake. Fortunately, the reservoir was empty at the time, and repairs are in progress, and will entail thousands of dollars to restore that facility.

Typical damage to the large utilities, water utilities, are things that you would normally expect to happen: rupturing of storage tanks, broken tank inlet and outlet piping, and breaks in the transmission distribution mains. Probably one of the biggest factors was the fact that water companies rely on power in order to either boost up the pressure or to lift the water, and when the power goes out, then they're — they were hindered.

For the most part, repairs took place rather quickly on the water systems, and they were able to sectionalize those broken systems and bypass them and keep service going while they repaired the damage.

I think of interest to you is the fact that the utilities — Public Utilities Commission has recognized that these companies are incurring an extreme amount of costs that they're unprepared to bear, and has ordered that they establish what we call memorandum accounts. That's just an account for the expenses they had, and then, later, they can come back to the commission in a rate proceeding and ask for being reimbursed for those costs.

Briefly, the condition of our telephone facilities, no major damage to the telecommunications networks occurred. The San Francisco Bay Area, Watsonville-Santa Cruz areas are served by two major telephone companies, Pacific Bell and General Telephone. And although all central offices remained operational, the big thing that hit the telephone companies was the high volume of calls and the inability to handle those calls. General Telephone says there were times that only 10 to 20 percent of the calls that they were receiving were able to get through, and Pacific Bell was forced to activate the network protective controls that they had establish to protect their systems.

There was very little damage to such things as switching equipment and outside plant. And the large utility companies had the back-up power systems, so when the power went off from the utility companies, they relied on their generators and batteries for assistance, and telephone service was functional.

Things of interest to you, I think, would be some of the things that was done by our telephone companies following the quake, such things as providing telephone service to the City of San Francisco when the city's own phone systems became inoperable, installing phone lines for and providing cellular phones for the city governments and emergency shelters and FEMA and other public agencies, setting up phone banks at emergency shelters to provide service for those people who were displaced from their homes, to set up special accounts to allow people to relocate their businesses and residences and escape the one-time installation fees.

As a result of all these things, the Commission acknowledged the good work that was done by Pacific Bell and issued a resolution in a Commission conference applauding them for the services they had rendered.

Unlike the major telephone companies, the customer-owned pay telephones did not have this back-up power supply, so when power was lost, the telephone service provided by that company was also lost.

Turning briefly to the Bay Area Rapid Transit District, as you know, BART already had a well-engineered emergency procedure in place, and when the quake took place, they implemented that procedure. Essentially, that involves stopping all the trains on the system until an evaluation is done of the system. And essentially, what you do is you evacuate the trains when you lose electrical power and radio communication. And I can attest that was what happened, because I was on BART, on a BART train, when it took place, and we had to leave the train and evacuate the system.

Typical damage identified by BART were structural cracks in station structures, which they classified as being minor, some concrete falling at places throughout the system.

Areas that were of concern to the Public Utilities Commission after the quake certainly was the leaks that were reported in the Transbay Tube. And as you recall, those things were fixed.

There remains an aerial structure that suffered damage. BART has hired a consultant to recommend the best way to restore service to that structure. In the meantime, it has been beefed up and shored so that it won't fail.

Turning briefly to the major railroads, essentially they followed the same things that the BART does. When the earthquake equipped — I mean occurred — all traffic stopped on the system until it was appraised how the system was, what condition it was in, and then traffic was allowed to resume, mainly at reduced speeds, until a later time. The same procedure went on as the aftershocks were experienced, any time of a magnitude of 4 or more.

In the Santa Cruz-Salinas area, there was damage that was suffered to the Southern Pacific Railroad system, such things as severe bridge damage and misalignment of tracks. At these locations, the facilities were inspected not only by the railroads, but by the state, CalTrans and the Public Utilities Commission. The Union Pacific and Santa Fe Railroads experienced little or no damage, with minimal delay to train operations. And Amtrak's passenger service from Oakland to Bakersfield via the San Joaquin Valley returned to normal within 24 hours.

The east-west transcontinental trains were operated from Sacramento east. The former Southern Pacific Oakland passenger depot was severely damaged, and then it was closing, and they're using adjacent buildings to carry on their ticketing operations.

Quickly turning to the gas and electric utilities, which I'm more familiar with, the service rendered by the men and women at PG&E in their restoring service to the thousands of its customers, I believe, was commendable. PG&E had in place an emergency response plan, and it implemented it well. It also had mutual assistance plans with its sister utilities, and it did ask for assistance and received that assistance from the utilities.

The PUC recognized the good work that they had done and expressed its thanks through, also, an issuance of an official resolution.

As a whole, the electric and gas utility systems performed markedly well, I believe, during the quake. I think this is in part due to the grid system that has been established over the years. This is evidenced by the three major electric substations that PG&E owns and incurred substantial damage, yet PG&E was able to restore service rather quickly by rerouting services through various portions of the grid.

On the gas side of things, very few leaks occurred on the gas transmission systems. And although there are many miles of mains that were subjected to both lateral and vertical stresses, the ductility of the steel pipes withstood the quake quite well. And except for those areas in which liquefaction occurred, in the Marina in particular, gas distribution lines also held up quite well.

There are areas that we believe that were — we should learn from. And first of all, I'd like to address the role that the news media played in assisting the public. I think you'll agree, as I do, that in general, an excellent job was done by the news media. However, there are some incidences there, I think, that need to be focused on.

And immediately following the quake, some radio and television announcers recommended to the public that they turn off their gas supply at the meter. PG&E, after they heard this, then, within — I think it was about a period of a half-hour — was able to contact the news media and inform them to please tell the public not to turn off their gas, only in the case that they smelled gas. This the news media essentially did, go back on the air and tried — and warned them.

It should be noted that at least with the news media people that I was listening to, the first place they turned to for advice was the Yellow Pages of the telephone book, and in the telephone book it correctly states what you should do in turning off your gas system.

Well, consequently, as part of this early miscommunication, the day after the earthquake there were some 145,000 on the PG&E system that were without gas service, with a large portion of this, according to the estimate I received from PG&E, at least 85 percent of those were residences that didn't really need to turn off their gas, but did to — upon the advice of the news media.

Well, PG&E was faced with one huge relight program. I think you've heard people testify how well this was done, and it involved the help of some 400 people from neighboring utilities.

I was present during your hearings that you held at the Presidio when PG&E's division manager from San Francisco testified that he preferred the people to turn off their gas supplies if they felt leaving them on might constitute a danger, and that he really didn't mind the problem that was created in turning the gas back on. I really think he missed the point. And had a quake like this occurred during a cold snap in January and we had 145,000 people without gas service, I think it's very conceivable that thousands of people would not wait for PG&E to relight their appliances, and would attempt to do so, and in the process, we would have incurred many injuries that we, luckily, didn't have to do this time.

So, in order to address this problem, we're considering holding a meeting with the gas utilities in January to explore better ways of informing the news media and the public when it is advisable to turn off gas service and when it is advisable to leave it on.

Another lesson to be learned from the quake, I think, is the utility systems don't perform well in ground that is subject to liquefaction, as evidenced by the damage that occurred at the San Francisco Marina. PG&E has completely — has completely rebuilt that 10 miles of gas distribution and service lines in the Marina District, and I believe should be commended for the fine job they've done and being able to do that in such a short period of time.

Now, the lines that suffered the most danger — damage — were those old cast-iron mains. And cast-iron mains are recognized as being subject to leaking, and not only in California, but all across the United States. And so, it's kind of a national program to replace cast-iron mains. Fortunately, the cast-iron mains that were not subject to liquefaction in San Francisco and throughout the Bay Area really performed quite well.

So, in order to kind of address the issue and get to the heart of the matter, we are planning to issue a letter to all gas and electric utilities in the state, asking them to identify facilities in their service territories that are subject to liquefaction. Hopefully, this will identify those facilities with the highest need for attention and possible replacement.

And I think the final lesson I want to comment on today is — has to deal with electric substations. During the Whittier earthquake in Southern California, Southern Cal Edison and the Department of Water and Power suffered substantial damage to their electrical equipment. And a lot of those losses at that time were attributed to equipment not being anchored to their foundations properly.

And during the recent quake, PG&E also suffered damage to its three main substations in the Bay Area, and we lost a large amount of equipment on both the 230-KV and 500-KV circuitry. Much of this equipment was anchored to its foundation, but it still failed, so, as a result of this, we are considering holding meetings with all electric utilities in California to explore better ways of protecting this kind of equipment from damage during a quake.

In wrapping up my remarks today, I'd like to leave with you the following thoughts. Although extensive damage occurred throughout the Bay Area as a result of the quake, our utility systems weathered the quake quite well. The utility systems in California are essentially constructed as a grid, enabling service to be rerouted around earthquake-damaged sectors. Thus, service can be rapidly restored.

Our utilities, for the most part, have a good emergency response procedure in place and mutual assistance agreements that appeared to work quite well.

Holding emergency preparedness drills by the utilities appears to be quite beneficial, and all utilities that I'm aware of do just that. There appears to be a need for the gas utilities to better inform the news media and populace as to the correct procedures for turning off gas service at the meter. There appears to be a need for the utilities to identify areas of liquefaction and to examine those existing systems, and if necessary, institute corrective measures.

Damage to equipment in electrical substations appears to be a recurring problem with each earthquake. There is a need to explore better ways to protect this system.

That concludes my remarks, and if there are any questions, I'll at least attempt to answer them.

CHAIRMAN CLUFF: Dan, do you have a question?

COMMISSIONER EBERLE: Your conclusion that the utility systems weathered the quake quite well for this earthquake, what if the quake were a little bit larger? Do you have any thoughts on how well the utilities would have stood up?

MR. COPELAND: I'm sure they'd incur more damage. I think the thing that's remarkable about our utility systems is the fact of this grid system, and that we do have the capability of rerouting around those areas and restoring service in a quick manner.

I think we ought to give a lot of thought to that, rather than trying to beef up a system to the fact that it could withstand an 8. earthquake or something like that. It's just a fact of life we're going to have to live with. In my experience, since I've been following earthquakes, the utilities do a great job of restoring service.

COMMISSIONER EBERLE: Thank you.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: Two questions.

One, could you tell a little bit more about the leaks in the BART tunnel? What was the nature of the leak and what was causing it? How was it repaired, and so on and so forth?

The second question has to do with the use of automatic shutoff valves for residential gas supply. I know this is sort of a controversial area, but much of the problems that you described about relighting and so on could be alleviated if the shutoff valves were flow-sensitive rather than shaking-sensitive. And I know, in Japan, they use such systems. I wondered to what extent California has considered that possibility.

So, those are my two questions.

MR. COPELAND: The problems with the BART tunnel, no, I'm not prepared to answer those. That's not my area of expertise. The remarks that I gave today was provided to me by those people that are responsible for that area.

Automatic shutoff valves, as you're probably aware, at least the utilities in California are very — I shouldn't say in disfavor of them, but they're certainly not pushing them.

My own opinion is, if there's a possibility, for instance, that their gas could be turned off and people then, like a gas stove, could in some way induce air into the system and create some kind of explosive nature, and then you try to relight things like that, you're probably creating some hazardous conditions by having them.

If you're talking about a valve that's going to trip and you're going to have to call a utility person to come in and fix that every time it trips, I think we're asking for an impossible situation in times of an earthquake, if you had half a million valves go off.

COMMISSIONER IWAN: I guess the purpose of my question was that, at the present time, we do use gas shutoffs occasionally, and I know the utilities don't like them, but they're basically shaking-sensitive —

MR. COPELAND: Um-hmm.

COMMISSIONER IWAN: — and the complaint is that it shakes and they shut off, but there wasn't any damage. And now they've got to go back and relight.

MR. COPELAND: Right.

COMMISSIONER IWAN: A flow device would only shut off if there was actual damage sufficient to cause a leak, which seems to be what the telephone book is telling you to do, but rather than relying upon human judgment, this would be an automatic system that would only shut the system down if there was, in fact, a leak. And I just wondered whether that had been given any consideration.

MR. COPELAND: That kind of a valve, I hadn't studied much. The type that I've had demonstrated for me is the one that just shut the system down, and those had a very reluctant support. In fact —

COMMISSIONER IWAN: Well, they're required in some places in Japan. You might take a look if you're interested.

MR. COPELAND: Yeah. But you can — you can see the problem a utility would be faced with, of trying to put that type of system back in operation.

The other thing, as I talk to various manufacturers of these valves, the thought occurred to me what a great thing that would be at Halloween time, for kids to go around and kick every one of those meters that had one of those valves and turn everybody's gas system off. So, there is a —

COMMISSIONER IWAN: Well, but — you see what I'm saying? I'm talking about a totally different system that's not shaking-sensitive.

MR. COPELAND All right.

COMMISSIONER IWAN: It only shuts off if you get a leak. If there was this overflow of gas, it shuts off. Shaking doesn't shut it off. So, the only time you can shut the system off is if, in fact, you had a large leak.

MR. COPELAND: All right.

COMMISSIONER KOCKELMAN: Like a circuit-breaker.

COMMISSIONER IWAN: Yeah. So, it's — yes, exactly. So, in fact, it's going to minimize the amount of relights, because they're not going to shut off unless there really was a leak.

MR. COPELAND: Yeah, it would.

COMMISSIONER IWAN: And I think that's when you want it to shut off, if it leaks.

MR. COPELAND: I'm not competent to really talk on that type of valve.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: Mr. Copeland, that was quite a comprehensive report, and I wondered about the Santa Clara Valley Water District. Would that be outside your jurisdiction? They suffered damage on their treatment plant.

MR. COPELAND: Yes. All I can tell you is what is prepared in these remarks. That was provided to me by another part of our commission also.

COMMISSIONER KOCKELMAN: I see. So —

MR. COPELAND: I'll be glad to get you some information.

COMMISSIONER KOCKELMAN: No, no. There's — so, this — even as comprehensive as this is, there might be much more damage that this doesn't provide.

MR. COPELAND: Yeah.

COMMISSIONER KOCKELMAN: The second thing, on the electric power industry, it's my understanding that EPRI does most of their research. Is that true? The Electrical Power Research Institute in Palo Alto?

MR. COPELAND: That's true.

COMMISSIONER KOCKELMAN: Yeah. Well, in the case of earthquakes, have they done much research in that area for safety shutoffs, or does — on ordinary, you know, power-generating plants, not on nuclear plants, for example?

MR. COPELAND: They have done some work. I'm not aware of how extensive they've done — what — and certainly that's an area we hope to get involved with, by getting the utilities together and talking about that.

COMMISSIONER KOCKELMAN: Yeah. Thank you.

CHAIRMAN CLUFF: Commissioner Bolt?

COMMISSIONER BOLT: I'd like to ask you, Mr. Copeland, about the long-term interest of the PUC in the earthquake problem. Is there a staff member or members of the commission who make it their business to keep an interest in — I mean, the commission deals with so many aspects of utilities, how do you maintain a continued interest in this problem within the commission staff? Do you have an office that does that?

MR. COPELAND: Yes. It's my responsibility and my people, yes. We're the one that relates to your directive, your five-year plan.

COMMISSIONER BOLT: Right.

MR. COPELAND: We're the ones that take that and try to implement that among our utility companies and get a response back from them.

COMMISSIONER BOLT: And do you find that your commission in general is open to policy suggestions and actions regarding to earthquake safety measures?

MR. COPELAND: Oh, you bet. Sure, very much so.

COMMISSIONER BOLT: Do you have any written documents that summarize the work that's been done on earthquake safety by the commission?

MR. COPELAND: You will be receiving a report from us, hopefully by around May. That's on our agenda.

COMMISSIONER BOLT: Um-hmm.

MR. COPELAND: We have polled all the utility companies in California on measures that have been identified in the various five-year plans, asking them what they've done to identify critical components in their system, we've looked at their emergency response plans. All the various things that's been identified by you people, we're trying to carry out with the utility companies. And we're going to issue a report, and you should have a copy of it by May.

COMMISSIONER BOLT: I'll look forward to that. Thank you.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: I guess I'm pretty concerned about the comment you made that you're not too worried about an 8.0 earthquake and the effect on the utilities because they do such a great job in responding, when it's your responsibility to regulate the utilities. I think if we had that attitude, you know, fifteen years ago, we'd probably have a nuclear power plant in the Bay right now.

You have in your report that there's three substations that were substantially damaged, and there's not much detail on what happened, nor is there any detail on what you think that you're going to do to make sure that that doesn't happen again, other than to say that you're not going to worry about it because they do such a great job in responding.

I'm concerned about it. If there's a major earthquake there and there's a lot of substations that go down, we're going to be in a hell of a mess. So, I would like to know specifically what happened to the substations and what the PUC is going to do to make sure that it doesn't happen again, not only on this, but on other facilities as well, rather than just trusting the utilities to respond adequately.

MR. COPELAND: I think you misconstrued what I said. I said, as a whole, the utility system performs quite well. And that's been pretty evident. Certainly we identified the recurring problem of electric substations. Every major earthquake we've had resulted in extensive damage to this type of equipment. Certainly we need to explore ways to dampen the effect of earthquake on this equipment.

Either you're going to have to redesign the equipment better — that's one of the problems, I understand, is, when you buy this equipment, you either buy it from some place in Japan or back East, and it's the same equipment that you have anywhere in the United States. Maybe some of this equipment that we have in California needs to be built stronger so it can withstand some of these types of quakes.

And maybe there's a better way to mount this equipment so that it can dampen the effect of quakes when that happens and we don't — they don't shake down and fall. I think we saw evidence of what happened, at least in the Presidio we saw films of that equipment, and it was pretty well damaged.

Those are big concerns to us, and we want to strengthen those type of things.

A nuclear power plant, that's not within the jurisdiction of the Public Utilities Commission. We don't have to really worry about that.

Gas pipeline systems, as far as putting them on an extensive amount of valving and try beefing all these systems up, I don't know if that's practical. It's practical for a liquid line to have a lot of check valves, because you don't want backflow. The trouble with our pipelines in California now, we have mutual assistance agreements that we're receiving gas in one direction and turn around and having it flow back the other direction. So, you're limited on how many valves you can put in and the type of valves you put into a system.

And our — you know, the history has been that our gas systems perform very well. Steel pipe is a ductile and it moves and bends like a snake. But there's a lot of concerns, and we're attempting to address some of those.

COMMISSIONER PESTOR: Well, I just — you were saying that you may get together with the utilities, you may do something. You know, I haven't heard anything specific about what you're going to do. But, I mean, that's fine if you don't know what you're going to do, but I think that we'd like to know what you're going to do. And if it's coming back here in three months or six months and telling us what you're doing, you know, whether or not it requires legislation to tell you what to do, or whatever, we're — we make recommendations, but also there's a lot of things you know that we don't know.

MR. COPELAND: Okay. Well, that's —

COMMISSIONER PESTOR: So, you know, we are concerned with seismic safety, and personally, I don't appreciate the attitude that, "An 8.0 earthquake comes along, I'm not going to worry about it because they respond okay." That's not a good, responsible answer from an entity that's supposed to regulate these utilities.

MR. COPELAND: If I conveyed that attitude to you, I apologize. I have identified the two programs that were immediately going to take place. One is looking at — making the utilities identify the areas of liquefaction so we can address those; the other is the switch — switch yards — two major problems I see.

CHAIRMAN CLUFF: Mr. Copeland, Randy's points are well taken, but the purpose of this hearing is on the response of the utilities for this earthquake. And I think we will want to address his questions at some later time, and we're glad to see you addressing them, but our main objective here — and I think you've answered them very well — is on what happened in this earthquake and what worked and what didn't, and we'll want to pursue some of these other things in future meetings.

Thank you very much.

Other questions from other commissioners?

Oh, please.

COMMISSIONER SCOTT: If I can just quickly ask a question, coming back to BART for a little bit — this really has to do with strong motion instrumentation. You mentioned the Transbay Tube leak and damaged aerial structure or structure. It's my understanding that BART at one time had the tube instrumented, or at least had an instrument in the tube. But whatever this was there was allowed to lapse, or maybe even taken out — I'm not sure —so that there was nothing operative in this recent earthquake.

I don't know what they've done in terms of instrumenting any of their aerial structures, but I'm just wondering, and certainly in connection with BART, and maybe with any other utilities to which it might be applicable, whether the Public Utilities Commission could do something to encourage the utilities to put instruments in appropriate structures so that we can record valuable information in future earthquakes. Is there something that the Public Utilities Commission could consider doing, or is that something you'd rather sort of take in advisement and consider later?

MR. COPELAND: Sure. I mean, the Public Utilities Commission carries a lot of weight and can do a lot. What I would encourage you to do is to make your concerns known to the Public Utilities Commission through a letter to the president of the commission. With a letter from this Commission, I'm sure you'll see all kind of action taking place.

CHAIRMAN CLUFF: Any further questions?

(No response)

CHAIRMAN CLUFF: Russ, thank you very much.

MR. COPELAND: You're welcome.

CHAIRMAN CLUFF: The next part of the presentation will be Housing and Community Development. And I'm sorry, I don't see a name on the list. I see people coming up, so I will ask you to introduce yourself.

Welcome to our Commission hearing.

MR. FITZ: Thank you. My name is Travis Fitz. I'm a deputy director with the Department of Housing. And I have staff with me, if you have questions that I can't answer — and the realm of possibility is enormous.

Our department's response to any emergency is initially with our Codes and Standards Division in support of the Office of Emergency Services and FEMA on damage assessment. This major occurrence was unique in that regard, in that our staff was not required to do damage assessment. The damage assessment was substantially handled by the media, and the lieutenant governor and the president had declared the emergency before we could mobilize.

Consequently, we were able to deal with our primary responsibility of manufactured housing, and that's what I am most prepared to report to you today.

We, the Department of Housing and Community Development, have responsibility for mobile home installations or mobile home parks, in approximately 50 percent of the areas of the state. And the balance of the 50 percent, local government has opted to enforce the mobile home parks program.

There has been a considerable amount of concern for the standards for installation of mobile homes over the years. Our staff have proposed, on more than one occasion, that the installation systems for manufactured housing be more substantial than they presently are. We have been unable to convince the then-Commission of Housing and Community Development to adopt more stringent regulations in the face of substantial opposition at those hearings.

In any event, we were also aware of other phenomenon with respect to the performance of manufactured housing in earthquakes from prior earthquakes, the

Santa Barbara earthquake, Morgan Hill, Livermore, and others, where our staff had reported back to us that our different types of manufactured housing support systems seemed to perform differently in earthquake. Unfortunately, in those relatively small earthquakes and our relatively small response, we were unable to accumulate sufficient data to support the staff comments in a form that would justify going to public hearing.

In this particular case, we have had the opportunity to address a very large earthquake, a very large number of manufactured homes, under less-than-ideal circumstances, given our basic responsibility for human safety. But we, early on, developed a format for our inspectors, while they were conducting their normal health and safety inspections, to also evaluate the performance of the several types of support systems for manufactured housing, which our regulations allow.

Although we have not concluded that, I have some preliminary data to report to you today.

Within the area of the earthquake in the nine counties, we had failures of manufactured home support systems primarily occurring within three counties, that being San Benito, Santa Clara, and Santa Cruz, of the roughly 10,000 mobile home installations within that area that are HCD responsibility. I remind you that there are some 15,000 in that area that are under local government responsibility.

We immediately began to evaluate the damage to manufactured homes in the entirety. We discovered that there were eight manufactured homes destroyed by the earthquake. Four were older homes damaged structurally beyond repair, and four were damaged by fire, we believe a direct result of a severed gas line when the home slipped from its support system.

We have looked at, to date — and we still have people in the field — almost 1,300 manufactured homes in 12 of the parks — 12 of the manufactured home, mobile home, parks where we had homes go down. We had, within those parks where homes went down, 38 percent of the manufactured homes shifting from their support systems to a degree necessary that they be reinstalled.

We concentrated our efforts on evaluation of the support systems to those 38 percent that had slipped or changed to a point where their installation or reinstallation was required. As you may or may not be aware, we allow the installation of manufactured homes on metal piers, concrete piers, concrete blocks, and certainly in conjunction with earthquake-resistant bracing systems that our department has been certifying since 1985.

Of those that we evaluated, we found 30 percent of the homes to be installed on metal piers, a very common installation system for manufactured homes in mobile home parks. 36 percent were installed on concrete block, which is your common 8-by-8-by-16 building block. 34 percent were installed on concrete piers, which is a relatively simple pier system. Cast into it is a metal support, which is adjustable to the frame of the home.

Of those homes installed on metal piers — remembering that we were concentrating on these 12 mobile home parks within a very large area, being the only 12 parks where we had failure — of those homes that we looked at that were installed on metal piers, 64 percent went down. Of those that we evaluated in these same parks that were installed on concrete piers, the failure rate was 43 percent that went down. Of those that were installed on concrete block — again, your typical 8-by-8-by-16 building block — we only had a failure rate of 12 percent.

Now, this is sufficient data, and sufficiently documented, that we will be going to public hearing as soon as we've concluded our evaluation of these types of support systems. The purpose of the public hearing will be to revise our approved support systems in the direction of what we believe is a superior system in earthquakes. There is a considerable amount of controversy. Several industries are going to be affected, but we, for the first time, have some data.

Also of considerable interest, although in relatively small amounts, was the evaluation of our relatively new certification of earthquake-resistant bracing systems. In the parks, the 12 parks and the 1,300 homes that we looked, only 46 had earthquake-resistant bracing systems. Roughly half of those systems were HCD-certified. The balance were either pre-HCD certification systems that were sold, or homemade earthquake-resistant bracing systems.

In all cases, whether certified, precertification, or homemade, the earthquake-resistant bracing system performed without failure. In each case, they did what the statute requires, and that substantially reduced the damage to the home. It did not reduce the damage to the lightweight aluminum awning or to the skirting around the home, but they prevented the mobile home from falling to the ground.

So, we have never — as Toby is well aware — we have never had an opportunity to evaluate our own certification system, and even though it's an extremely small evaluation, we're quite pleased. It has also been observed that those HCD-certified earthquake-resistant bracing systems limited the damage to the home and its appurtenances substantially more than the precertification systems, and even then, substantially more than the homemade systems.

So, they do perform. The question of their value to cost, to damage, will take a better sampling than we've had the opportunity to review here.

We have had inspectors in the field since the outset. We have been shifting from our initial response to the damage to manufactured housing more into the area of emergency housing, through our several migrant farmworker centers. We're working with FEMA and the Office of Emergency Service to house victims, primarily in the Hollister-Watsonville area.

Our staff have headed up construction efforts for what is now four temporary mobile home parks. We have recently finished an occupied one in Watsonville. We will finish the second Watsonville temporary mobile home park next week. The first housed 43. The second will house another 33 families. We have a park under construction in Hollister that will house another 30 families. We have just finished, and are in the process of occupying, a park in the community of Pajaro, Monterey County, for 30 families.

There are other areas being considered presently by FEMA, the department, and OES. I do not know where we plan to go from these initial four, but we will keep staff in the field, and we will continue to construct temporary mobile home parks as long as is necessary to accommodate the need and with FEMA support. They're supplying manufactured homes.

We had only one county request assistance to their Building Department, and I heard the testimony earlier of the outstanding job that the fire marshal did in evaluating residential structures. We only had one county request our assistance; that was Santa Cruz. We've had staff assigned to Santa Cruz County from the outset, assisting them.

There was a tremendous response from all state health and safety agencies. Anything and everything that the fire marshal was able to do relieved the Department of Housing or the local government. I think there are several qualified people out there, that even though they weren't within the areas of their specific jurisdiction, performed quite well and took the pressure off of other agencies, so we were able to address what I consider a major event, in a rather adequate manner.

I would be pleased to answer any questions the Commission might have.

CHAIRMAN CLUFF: Thank you very much.

Bill?

COMMISSIONER KOCKELMAN: Yeah. These are quick, and you may not even know the answer.

What was the distance from the epicenters that was centered on these mobile home parks?

MR. FITZ: It seemed to vary, and without logic. I do not know the mileage distance from the epicenter of the earthquake, but we had damage in Watsonville that's relatively close to the epicenter, we had considerable damage in Hollister, relatively close, and then we had what appeared to be a jump into Santa Clara County, and in central south Santa Clara County, we had a considerable amount of damage.

COMMISSIONER KOCKELMAN: Were these along rivers or along the bay or anything? Did we have, you know, high waters or something?

MR. FITZ: I apologize, but I do not know specifically.

COMMISSIONER KOCKELMAN: Do you have any idea about the percent of gravity or acceleration?

MR. FITZ: I do not.

COMMISSIONER KOCKELMAN: And how many did you find that were okay, but they still broke the utility service lines? They weren't inhabitable, you know, even though they were, you know, still standing and maybe structurally safe.

MR. FITZ: Well, that's difficult to answer, because of the — because of the response of the homeowners. A majority of the homeowners —

COMMISSIONER KOCKELMAN: Reconnect quickly and get back into it?

MR. FITZ: Well, they were not necessarily disconnected, but the ride, perhaps, in a manufactured home that is not tied to the ground is considerably different than that of a home on a foundation system. We had several hundred, if not more than a thousand, inspections that we've done, occupants that evacuated their home and would not — or would reluctantly re-enter their home until we had made an inspection. We've made more than 1,000 inspections that did not result in our having to issue a permit or have the home reinstalled. They were primarily to assure the homeowner that it was safe to reoccupy.

I am only aware of the eight severed systems. If you are aware of the method by which manufactured homes are installed, they're installed with flexible water, sewer, and gas lines. That flexible gas line is only 6 feet long, so if you have a tremendous amount of movement, it is severed. But I'm only aware of the eight.

COMMISSIONER KOCKELMAN: Yeah. I wasn't aware that there were flexible connections.

How many — anybody killed or injured?

MR. FITZ: Not to my knowledge. I'm not aware of —

COMMISSIONER KOCKELMAN: Yeah. The last question is, you all are interested in retrofitting now, with the new standards and new equipment. All existing mobile homes? Is that something your agency would be interested in? And how can we help, you know, go back and retrofit the old stuff?

MR. FITZ: I've been with the department, sir, for 17 years, and I have tried to carry forward the regulations that would stiffen up our current requirements. And I would be looking, even this time, given the battle scars from prior history, only to being prospective, and not retrospective. I am not sure that I would attempt to try and retrofit.

COMMISSIONER KOCKELMAN: So, you think that your experience will result in some new standards and criteria in equipment, and then you'll get that adopted into your regulations, and you'll enforce that on new home mounting, but it won't go back and look at the old stuff.

MR. FITZ: I would not propose that. And I believe, now that we have sufficient data, that we can overcome what will be considerable opposition to a change in the standards.

COMMISSIONER KOCKELMAN: Yeah. Thank you very much.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: This is not a question, but is a comment, and, again, on the bracing system.

The whole idea of the earthquake-resistant — certified earthquake-resistant bracing system grew out of the Santa Barbara earthquake of about ten or eleven years ago, in '78 or '79 — when was that? Anyway —

CHAIRMAN CLUFF: '78.

COMMISSIONER SCOTT: '78, okay. I remember that well, because we had a day-long committee — Commission committee hearing in Santa Barbara shortly after that, specifically on mobile homes and what had happened to them. It seemed even there quite clear that it was a very good idea to have an earthquake-resistant bracing system. And now, here it is — what is it? — eleven years later, and there — and you have some in existence, but it seems like there's still very few of them. They perform very well, but there ain't very many of them.

MR. FITZ: That's correct.

COMMISSIONER SCOTT: I'm just hoping that in the future, in the next eleven years, we can make substantially more progress, both with the new ones still to be built, and even maybe start slipping up, creeping up on those that are already around. In other words, maybe try to think about this unthinkable, the retroactive action on those that are standing there on piers or whatever, just waiting for the next earthquake in order to cause the owners some real headaches.

CHAIRMAN CLUFF: Stan, let me just ask you a question, kind of play the devil's advocate here.

Is this a real life safety question? I mean, he said no one was injured or killed, and I remember looking at the statistics on past mobile homes, where there's a lot of disruption, but I don't think we've had a high amount of losses.

And, you know, are we dealing about economic protection or are we dealing about life safety?

COMMISSIONER SCOTT: Yes, I — I'm no expert on this. It's my horseback opinion that it's probably not very much of a life safety, but it is a sure a nuisance safety factor.

MR. FITZ: Yeah.

CHAIRMAN CLUFF: Tom, you have a point?

COMMISSIONER SCOTT: And probably — and probably a cost factor to quite a few owners who really don't have the excess capacity, in terms of their budget, to meet the kinds of costs they will have to meet, I guess, when they get shaken off foundations.

EXECUTIVE DIRECTOR TOBIN: I think you also have to consider the high public cost of emergency housing prior to an earthquake. That's been one of the number one impacts of this earthquake. And when we have devices that, for $1,000 or $2,000, we can prevent, you know, 50 percent of these homes from being damaged and people being displaced for a day or a week or two weeks, whatever it is, I suspect that publicly, we end up being ahead.

You know, I think that this is the kind of retroactive program that, on sale or transfer of title or something like that, could be in effect, rather than a — you know, a heavy-handed government program that comes in so that, you know, you have to, you know — you know, tear up whatever it is and slide something under it.

I have sort of two quick questions. First, I'm really delighted with the thorough data that HCD has collected. It's, you know, going to be really most helpful, and we, of course, would like very much to be able to help and pursue the regulation changes that are — you know, that you're contemplating.

The question of emergency housing afterwards in the trailers is something that we've all seen that's been a very tortuous process. And I know that it's because of HCD and state efforts that we finally have those trailer parks opening up providing the housing, and it's not something to be blamed on HCD or the state. I was wondering if you had an observations on how we can speed that process in future earthquakes, so that this reasonably decent short-term housing can be provided sooner rather than later.

MR. FITZ: I wish I could give you an unemotional response to that. We, in the system that we have devised in cooperation with OES and the federal government, require the cooperation of local government. And my only response is that our department, FEMA, and OES have all responded above and beyond the call of duty, as has CalTrans and Pacific Gas and Electric Company. The response of local government in designating the land, providing the sewer and water, which are principally local government utilities, has not been a match for the response of state, federal, and private utilities in constructing temporary mobile home parks.

And I'm afraid, if I go further than that, I'll get myself in serious trouble.

EXECUTIVE DIRECTOR TOBIN: You know — thank you, and I understand that, but I think it's one of the Commission has to look at, is local government demands for screens to screen them so people outside of them don't have to look in at this ugly park, and requirements for park facilities and other sorts of facilities make this an incredibly complex problem that ended up hurting the people who were homeless at the time.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Yes. Did I hear you say that four of these mobile homes were fire-damaged or had fires, resultant fires?

MR. FITZ: Four units, out of those that we looked at, were destroyed by fire.

COMMISSIONER SNYDER: Okay. Do you know by what cause? When they have a flex gas line, what was the cause?

MR. FITZ: We believe that the cause — and again, we're not fire marshal investigators — we believe the cause was a severed gas line, when the home went over, listing away from the gas meter in all cases. The severed gas line was ignited, most probably by a water heater that was close or in a reasonable area. But that's only our belief. I could not prove that.

COMMISSIONER SNYDER: The reason I'm asking is that I did see slides following the Morgan Hill quake of a mobile home just destroyed by fire, but there was not flex lines between the water heater and the furnace. There was a solid gas connection between those two units, just with a piece of plywood in between the two units. It probably had flex line coming into — from the utility into the mobile home, but I didn't know if that had been changed or — you may not even know, but that has stuck in my mind that that was solid tubing between those two units, the furnace and water heater, and it severed in that case.

MR. FITZ: If it was, in fact, solid pipe, it would have been in violation of our regulations. I have to presume some after-market modification.

COMMISSIONER SNYDER: Could it have been an older mobile home, or —

MR. FITZ: Well, we've been regulating those homes since 1958, and we've never allowed the solid pipe connections, so I presume it's an after-mark of the homeowner repair that would have created the solid pipe connection.

COMMISSIONER SNYDER: Thank you. I didn't know if the code had been changed or what. Thank you.

COMMISSIONER KOCKELMAN: This is just a quick one.

CHAIRMAN CLUFF: Bill.

COMMISSIONER KOCKELMAN: Tom and Stan gave me kind of an idea. Would you happen to know, or could you tell Tom in a few days what the benefit-cost ratio is between your new system of tying these suckers down and the cost of rebuilding them and reconnecting them, the ratio? Are we talking, you know, $1,000 for your system and $10,000 to re-erect these things.

MR. FITZ: We will have some information — I don't know if it would be entirely accurate, because we're dependent upon the homeowners and the contractors to get the information.

COMMISSIONER KOCKELMAN: Yeah, I understand. You want to give us that with an asterisk on it and say you — you know, "These are preliminary, and we — you know, not reliable"?

MR. FITZ: We will be attempting, as required, to do some sort of cost-benefit analysis before we go forward to the regulations. It will be vulnerable, and can certainly be challenged.

One of the examples that Toby had mentioned, that you could get an earthquake-resistant bracing system for $1,000 or $2,000, on October the 18th, the going price was $6,000 in the Bay Area. The price went up rather dramatically, and I'm not sure they're currently available for the price that you quoted.

COMMISSIONER SNYDER: What was it on October 16th?

MR. FITZ: They were ranging in price from $2,200 to $3,500.

COMMISSIONER KOCKELMAN: Is that just a normal market thing, that they kind of gouge?

MR. FITZ: Well, the —

COMMISSIONER KOCKELMAN: Are these easy to manufacture?

(Laughter)

MR. FITZ: They —

COMMISSIONER KOCKELMAN: I still think we'd be interested, because, you know, if you go back to the legislature some day, you're going to have to know that.

MR. FITZ: Well, I'm not sure that I could pin down the cost exactly. I do know that it went up rather dramatically.

And another phenomenon that we've seen in other earthquakes, side by side, the reinstallation of the homes, and why it's so hard to get a handle on it.

There were contractors within the area within hours that were reinstalling homes for people, upwards of $6,000. There was a Sacramento company that was in the area installing homes free. And I don't know how we could ever give you a valid comparison, when the compassion of different people within the industry varies rather substantially.

COMMISSIONER KOCKELMAN: Yeah. I wouldn't ask for an average of those cases. Just cost it out, you know. How much does it cost to jack one up and throw it back in place, connect the lines, and certify it's okay, as opposed to $2,000 or $3,000 to tie it down? Is that what your new system will cost, do you think? If it's mass-produced for the world, how much will it cost?

MR. FITZ: Well, I do not — I do not want to lead you to believe that we are going to propose, in our new installation standards, a new system with tie-downs. The tie-down system is one that I personally have gone forward with twice before and lost. I promised myself once I would never do that again. I don't know if you've ever faced the some one million members of the Golden State Mobile Home Owners League at a public hearing.

COMMISSIONER BOLT: They have been to the Commission.

MR. FITZ: Oh, good.

COMMISSIONER KOCKELMAN: Not all of them.

MR. FITZ: Not all at one time.

COMMISSIONER BOLT: Well, it seemed like it.

(Laughter)

MR. FITZ: If the statistics keep looking better and better, my courage may improve.

CHAIRMAN CLUFF: Well, thank you very much for your complete report.

The next item is the Division of Safety of Dams. Vern Persson is here. And we're proud to have Vern back here with us today to tell us about the number of dams that experienced this earthquake and how they dealt with them and what we learned from it.

MR. PERSSON: Mr. Chairman, commissioners, as the chairman says, I have the dam safety program for the State of California, and I have a handout for you this afternoon, if you want to take this with you.

(Mr. Persson distributes copies of document.)

MR. PERSSON: On the 17th of October, I was sitting in my office when the earthquake reached Sacramento, about a minute after the event in the Bay Area, and the motion was very, very strong, sickening, in fact. I stood up so that I wouldn't become ill.

But there were a few of us at the office that remained, but the response from the staff was enormous. Within ten minutes, people started returning to the office, and we had to call one individual to come back to work, and we started a 24-hour operation at that point.

We sent one senior engineer to the Office of Emergency Services to man the DWR desk out there. We immediately began for — to contact owners and plan for inspections on the following morning.

(The following remarks were accompanied
by an overhead slide presentation.)

MR. PERSSON: We have an earthquake program within the division, where we use an electronic data base, using the magnitude and the attenuation curves from Seed-Idriss. We develop a search area based on what we'll experience, on the basis of those curves, from the magnitude and from the level of ground-shaking over 5 percent of gravity.

In this particular earthquake, we had a search radius about 54 miles. It passed through the Golden Gate from the epicentral region we had at the time, which — that's one problem we have, is nailing down the epicentral location early, so we give that a little bit of slack.

But it went through the Bay Area, right through the Golden Gate, and would pass right through where the Nimitz failed, almost, the search radius. There are 120 dams in that particular circle, and we inspected 102 of those the first week.

As Mr. Copeland said earlier, Austrian Dam, owned by the San Jose Water Company, which forms Lake Elsman, suffered the most severe damage. The list I gave you has about 12 dams on it. The first three have the most severe damage, and Austrian by far the worst.

We — next one, Fred.

By the way, Fred Sage is with me today, and he is our regular liaison with the Commission.

We saw some very strong shaking from the 7.1 Loma Prieta. We had this map formulated from a AAAmap, and the little accelerations didn't print. So, at Santa Cruz, we had .47 — the first one is horizontal, the second one is vertical — .47 and .40 vertical; Corralitos, .64 and .47 vertical; Watsonville — that was at the phone building — .39 and .66 vertical. And we don't know if that's part of a structure interaction or something, but it was at the ground level. Lexington Dam, that item there is from the abutment, and it's .45 horizontal, .15 vertical; Saratoga, .53 horizontal and .41 vertical. And Salinas, it was .12 and .10.

The period of motion was very long, and that's the worst type of damage, motion, for an embankment dam.

Austrian Dam — next one, Fred.

The three dams, the sections are there, and they're all zone embankment dams.

The first one is Lexington. Lexington settled about 8 tenths of a foot. And that's owned by the Santa Clara Valley Water District, and it is just right near Los Gatos. There was cracking horizontally on the embankments, and there was some through cracking at the bridge abutments and down the groins of the dam. And this was sort of a pattern that we saw.

Next one.

This one is Newell Creek, owned by the City of Santa Cruz. It makes Loch Lomond Lake, very near Ben Lomond, which suffered severe damage. The cracking here was a significant — wasn't significant — it was there, but not what you'd consider severe. And there was very little settlement of Newell Dam, but the dam has been investigated.

The last one is a section of Austrian.

Next one.

Austrian is 185 feet high, and it's — it shows that it's a zone embankment, but we really can't tell the difference, what it is. This one settled about 2.8 feet, and it's in a very sharp canyon, and the dam cracked longitudinally parallel to the crest on upstream and downstream embankments, and it also cracked at the abutments and at the spillway structure.

Next one.

There was also an apparent — the settlement there is exaggerated 12 times, but you can see that the largest dimension of crest settlement is 2.8 feet. And you can see that it happened all across the canyon. We have settlement in the sharp canyon that basically cracked the dam and pulled it in from the canyon and settled in it.

The next one will show the displacement — apparent displacement of the crest of the spillway. North is shown there, and the dotted line that goes through the crest is the relative displacement of the crest; moving downstream near the spillway, and slightly upstream at the — at the right above.

Okay. We had some — they started to work there about the 25th of October. The owner — we asked the owner to investigate and repair, as we did on all of the dams that we had that were damaged. The real work began about on the 25th of October, which I have some slides — if we have time, I can run through quickly, show some damage.

The spillway structure was damaged and moved downstream, as best we can tell. There's cracking at very close intervals in the concrete shoe. The dam crest, as we said, settled and shifted, and the cracking was very apparent and quite deep. I think some of that information is listed in the handout that I have given you.

But there was a significant damage to the dam. The lake full is about 6200 acre feet. At the time of the earthquake, there was about 700 impoundment, as that area was just coming — had experienced a drought during the last water season. The canyon walls upstream and downstream of the dam have failed in many places, and there is downslope movement or slides in both the reservoir and down the stream. There's heavy — there's a large slide above the spillway, just at the center of the spillway. Some of those dislocations are measured in feet, and I have a slide or two of that in there also.

The work effort began. We excavated each abutment down on either end, about 30 to 35 feet, removed about 15 feet of the upstream section of the dam, recompacted it over the cracks, after the investigative effort to determine how deep they were — which they went down about 10 feet or so. And the other cracks were — some were deeper than that, 10 to 15 feet. Those were reworked.

We have asked for installation of more instrumentation and peizometers to check the water level. We have asked them to open the drain system, which had been blocked for years. And they are doing all of those thing. And plus, there is a grouting program, after the embankment has been rebuilt, to restore the cutoff through the — through the abutment on the lower part of the photograph.

If we could run through those real quickly, I think we've got to start there.

One of the — some of the problems we experienced, and it's been mentioned that the phone load was enormous, and we could call in for about the first four hours, into the area. And after that, we could not call in. We could receive calls, outgoing calls, from San Francisco and from the Bay Area.

Going the wrong way?

MR. SAGE: Yeah.

MR. PERSSON: Okay.

Why don't you focus that one?

It starts on 50-something there, isn't it, I think? Okay.

But we did, through OES and the round-the-clock stationing of folks out there, we used their radio communications system, and we used our — one of our employees had a cellular telephone, which we — which we used.

This is a helicopter trip that we — on the 25th.

We also had to compete for resources. On the first day, we shared a helicopter with the Corps of Engineers to go to the epicentral region and look at this major damage on Austrian and others. This was on the 25th. We were able to get a helicopter on that day, and five of us went — that's an East Bay reservoir.

Here we're coming up on Austrian. That's the spillway. The lake, you can see, is rather low.

Another shot of that. Interior looking out. You can see, in the center of the dam, there is — excavation is taking place, crack excavation.

And there's another shot of it. You can see the
— we've got a — the spillway's being explored there.

Another shot of the trench. You can see the number of trenches we've dug across the longitudinal cracking to investigate the depth.

Here is a short trench where there was actually shearing of the bedrock near the spillway.

And that's a — that's a shot also of the — near the spillway where — that's a shot looking down on one of the cutoff walls on the spillway, near the — near the right side of the spillway on the left abutment. And that opening there is about 9 inches, and indicates either interaction with the structure or downslope movement.

We tried to cover the cracks during the first rainy weekend after the earthquake with plastic. That works fine on the slopes, but on the levels, the plastic is just sucked down into the cracks and just reroutes the water to some concentrated puddle.

You can see that's on the left abutment. The cracking is quite pronounced. That's one of our people looking at one of the cracks.

That's what the dam looked like on the upstream —downstream side, looking over at the spillway.

There's another shot of that.

And that's the end of the spillway and the access bridge. And you can see that the bridge was damaged, and so there had to be a low-water crossing established before we could get the heavy equipment into the site.

They had another complication. There was a load limit placed on the — on the road system at one point, and they could not move heavy equipment in and off of — off of the site.

Rocks were falling off of the slopes, and that was damage done by that guy right there.

The spillway, looking down into the plunge pool, and there's some cracking of the spillway, which is quite severe, quite pronounced. The cracking goes all the way down the slope.

And there's a floor shot, with the cracking also in the floor of the spillway. The spillway has been judged necessary for replacement. But for the winter, we have had the owner inject epoxy grout into those cracks for — to take a flood of record.

There was a — some complex plumbing on the end of a 4-foot outlet pipe, which we asked the owner to remove to increase the capacity to that, given their CSF, to control the lake.

And that's a picture of the Cat that's redressing the slope after it had been recompacted.

There's a shot of the downstream, looking at the spillway where we had — the equipment there was pulling out the ends of the abutments. And there is a shot of the reconstruction near the spillway.

We will — if we can manage the reservoir, we will have them bring the reservoir up in stages and watch the seepage and the peizometers.

That's an interior shot of the spillway nose. And that structural bracing at the top had to be added because the walls were in such bad shape that they thought they might fall on the workmen.

You can see the grouting that's taking place there.

We normally like to condition our embankment material, wetting it in the borrow area, but in this case, the borrow area was 600 feet above this site, and so we were doing it right there on the fill.

A chimney drain was added to control any potential leakage that might get through there, and that's the grace rock that you see.

That's pulling down the left abutment.

And that's a shot of the rock which needs to be grouted on the left side.

And there is a shot of the grout that was injected during construction some — in the early 1950's.

Some cracking.

Some more.

But there was a downdropping of the curb on the roadway just above the spillway.

And there's a — the gray lines are the frequency in the cracks in the spillway, which have been since injected with epoxy grout. They plaster it over them, and then they search for the crack, drill a little hole, and then they work back and forth with two injection pumps, and fill the crack in that manner.

This stuff is good for about 6,000 pounds per square inch. Its modulus is quite low, however.

This is a shot of Noel Dam — again, crack excavation to determine the depth. Finding and locating and keeping these cracks is a problem, because the rain will fill them up, so they're staked.

And that's the evident motion between the intake and the fill.

Another shot of that.

Our people inspecting the intake.

And this is a little dam above Austrian called Williams. And we have only been able to get back into that one with a vehicle within the last week. The road had slid. We had inspected it with a helicopter, and it was — it was fine.

That's a shot of Lexington. Lexington has cracking, which is under repair. And the inspection of the outlet, which is not an earthquake damage, revealed that the outlet had suffered some damage where the steel liner had buckled inward. And that is in the process of being repaired at this time. It was not judged to be earthquake-related.

And there we have some — we were out on the Pajaro River in the helicopter, and the white spots in the middle of the photograph are evidence of liquefaction. And there's a boil in one of the fields that is quite — quite prominent. The cracks are quite large.

And you can see that there was — the Corps was out there, Corps of Engineers was out there looking at the levee damage, and there was — Dave Kennedy wanted to go out and see about the damage.

And you can see cracks in the levee, in the center of the photograph there.

There's the one that — Highway 1 that fell down just west of Watsonville. I'm an old bridge designer. I spent six and a half years doing that. And you can see the five piling in the roadway to the right there, that it punched right through the deck.

Some more damage there.

There's some slides that are apparent in the region, and that's it.

I think I've taken up quite a bit of time. Are there questions?

CHAIRMAN CLUFF: Vern, let me just compliment you on the fine job that the Division of Dam Safety does. And we often use your group as one of our prime examples on how forward-looking and what a success it is to be able to see a responsive agency get the job done. We don't have that same positive experience with some other groups, and we're very pleased with that.

And we always know you learn something every time, and you've been sharing that with us. So, we want to let you know how appreciative we are. And I just wanted to ask a question about the fact that we were in a drought condition. The reservoirs were all quite low. Was there any threat to the dams had they been — had the reservoirs been full, do you think?

MR. PERSSON: We don't know, on Austrian. The through cracking, the settlement — there was ample freeboard. The crest is like 11.25, and there's 15 foot of vertical distance between the crest and the spillway level. They do have a — they did have a rubber bag in there to make about 5 more feet, but there would have still been about 7 foot, even with a bag and a full reservoir, before overtopping would occur.

We don't know whether that would hyped along the through cracking at the abutments. We're — from that standpoint, we're glad it wasn't full. The construction effort on Austrian is not exemplatory. It was — it is full of dissension and dispute on what to do with that very complex foundation. And some of that grouting you saw was in response to not taking that material out. So, the — in fact, the guy that had my job quit over it, and there was a new guy in place after that.

CHAIRMAN CLUFF: Commissioner Bolt?

MR. PERSSON: Yes?

COMMISSIONER BOLT: On the same point, Vern, of learning what we can from these experiences, were any of these dams studied under some re-evaluation program?

MR. PERSSON: Yes.

COMMISSIONER BOLT: Over the last ten or fifteen years?

MR. PERSSON: They were.

COMMISSIONER BOLT: So that we have some data on what was done at that time —

MR. PERSSON: Yes.

COMMISSIONER BOLT: — and the comments made. And that can be now put against what actually happened.

MR. PERSSON: The estimates that were made in the studies were quite good. As you know, the 7.1 — we don't know just how much additional acceleration or duration we're going to get from the MCE, which they were rated for. But the MCE, or the test earthquake that was applied to Austrian, produced about 9 foot of settlement. And we —

COMMISSIONER BOLT: You're at 2.8.

MR. PERSSON: 2.8. So, it's well within error bar, I would say.

COMMISSIONER BOLT: Now, these would have been tested against an 8.5?

MR. PERSSON: Yes. But the — but the acceleration that was used in the test earthquake, we were looking at that, and it was — this one, the 7.1 on the Richter, we see is quite severe compared — it wasn't — it wasn't bigger than the 8, but it was probably not big enough.

COMMISSIONER BOLT: And the spectrum, have you compared the spectrum of the tape taken with the —

MR. PERSSON: We haven't had time. Just the peak accelerations.

COMMISSIONER BOLT: Thank you.

CHAIRMAN CLUFF: Will?

COMMISSIONER PEAK: First, I'd like to express my thanks to Vern for not mentioning that my name may be associated with a couple of the reports made during construction of that dam.

MR. PERSSON: They're there.

COMMISSIONER PEAK: I know that they are, unfortunately.

(Laughter)

COMMISSIONER PEAK: Next, we should — this is another one of the lucky things that happened during the earthquake, and it should be pointed out, is the long dry spell that we've had since the earthquake, with the exception of the one rain which was three or four days later. That was not a real bellywasher in that area particularly, and if we had had some kind of rains of record or anything approaching that, Vern might be telling an entirely different story now than he is telling, if that reservoir had filled immediately after the earthquake.

But since we have had this long dry spell, it has enabled the owners to make necessary repairs, which will carry the structures over the wintertime. And then, more major repairs can be made next summer.

A couple of questions. One, we are interested in the inundation mapping program, and this was one of the proposals for possible legislation that we had considered earlier in the year. Do you know, Vern, if there are inundation maps for any of the three most damaged dams, Austrian, Noel, or Lexington?

MR. PERSSON: I believe there are.

COMMISSIONER PEAK: For all three, you think?

MR. PERSSON: There are for at least — well, I know there is for Lexington, but they — we just — we just moved to a new facility at 2200 X Street, and the machine —

COMMISSIONER PEAK: You can't find them — I know.

MR. PERSSON: No, we — we haven't been able to get an electrical outlet that accommodates the machine that makes the reproductions from the — from our file copy of the inundation map, still haven't gotten it done.

As you know, OES is responsible for determining when and if an inundation map is prepared.

COMMISSIONER PEAK: Right.

MR. PERSSON: And the department cooperates to flood — through our Division of Flood Management in reviewing those maps that are prepared at OES' direction by the owner. So, we've used that only as an information source.

We really have no — no action in that program at all.

COMMISSIONER PEAK: I appreciate that. I think, if you can find that out and let the Commission know —

MR. PERSSON: Okay.

COMMISSIONER PEAK: — I think, in the future sometime, because one of the things that we're talking about, if we get into this in the way of legislation, is strengthening this program, putting more teeth into it, and possibly changing the criteria for determining which dams have to have inundation maps and so forth, that we have some examples here of damaged dams that did not have maps —

MR. PERSSON: Okay.

COMMISSIONER PEAK: — it would help in that regard.

MR. PERSSON: We'll do that, yeah.

COMMISSIONER PEAK: One quick last question. Your interface immediately after the earthquake, you indicated to me that there were possibly some problems with the Corps of Engineers. Would you like to comment on that, or — you can skip it if you want to, but —

MR. PERSSON: I'll just make comments that — of my own reflections, that the Corps called, and there was an interchange with the staff, and there was an offer for a National Guard helicopter, where about seven of the staff could go on an inspection trip the following day. That became downgraded to the fact that two could go the following day, on a helicopter that was provided by the Corps under contract with a private vendor.

And we did that, and the inspections went very well. But after that inspection, the Corps felt it necessary to issue a report to us, saying that we had asked for it. Well, we really hadn't asked for it. We really want to cooperate with our federal agencies, and so we met with them on a draft copy of the report, which indicated that three dams should be breached — they didn't use the word "breached," but they used the word "notched," and Austrian was one of those dams.

And we did not feel that the situation was that severe, because Lexington is right below this dam, and we had worked out a cooperative agreement with — between the two agencies that Lexington would be held down until we could determine what the conditions were at Austrian. And there was absolutely no threat of release at the time we were making those inspections.

We got a little bit concerned about the rain, but the rain stopped, and we've had good weather for weeks. And during the four weeks of reconstruction, we've had excellent weather. And that was a seven-day-a-week, dawn-to-dusk operation.

But the Corps did finally reissue the report, with a much softened recommendation version after we met with them.

But I think they had their own internal problems with what the Corps management thought that their responsibility was in California.

You may wish to inquire further about that, because if I would tell you anything, I would — it would be hearsay at this point.

COMMISSIONER PEAK: I just wanted to put that on the table as a possible area of conflict of interest between state and federal agencies that we may get involved with at some time in the future.

CHAIRMAN CLUFF: Gee, that's a new issue. How did you ever think up that one?

(Laughter)

COMMISSIONER PEAK: I don't want to handle it this year, though.

CHAIRMAN CLUFF: That's an age-old point that's been around for a long time.

MR. PERSSON: It gives us a little difficulty, yeah.

I would just tell the Commission that we — I've been asking for additional funds for the program for a number of years, and just by coincidence, we did get approval from the Department of Finance for a $500,000 increase for the coming year that begins July 1st. That's a — that will help, because we have been backlogging some deficiencies that we haven't been able to investigate, and that represents five people in a complete suite of personal computers and a larger model for analysis.

CHAIRMAN CLUFF: Tom had some questions.

EXECUTIVE DIRECTOR TOBIN: I have one question.

I understand that there was a saiche, I believe, in the Lexington Reservoir, you know, that caught the University of Santa Clara crew by some surprise, and as they were out in the water, they saw the bottom of the reservoir expose itself along the margins and then fill back up quite rapidly. I just wondered if there had been any measurements or any data taken from the saiche that could help improve our understanding of that phenomenon.

MR. PERSSON: Tom, that had not been reported to me. What I did hear on that was from Dick Volpe, who's the engineer that's been engaged by the Santa Clara Valley Water District to do that engineering down there. And he told me that it was a very choppy response, without a wave, in other words, just a series of — just what the first-grader draws for water, all over the lake. I hadn't heard the other.

EXECUTIVE DIRECTOR TOBIN: Okay. I have a source for that, and what we'll do is we'll sort of depose them —

MR. PERSSON: Okay.

EXECUTIVE DIRECTOR TOBIN: — maybe on tape, and add that to our transcript and provide that for you.

CHAIRMAN CLUFF: Any further questions?

(No response)

CHAIRMAN CLUFF: Well, thank you very much, again, for the complete report.

MR. PERSSON: Thank you.

CHAIRMAN CLUFF: The next item is the Office of Statewide Health Planning and Development, Neal Hardman.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes?

COMMISSIONER BOLT: While we're waiting, how many more presentations will there be?

CHAIRMAN CLUFF: There's two more.

EXECUTIVE DIRECTOR TOBIN: This one and one more.

CHAIRMAN CLUFF: Yeah. This one and the last one.

And Gary Pettigrew as well. Welcome.

MR. PETTIGREW: Thank you. Good afternoon, Chairman and commissioners.

I'm not Neal Hardman, as you've observed. I am Gary Pettigrew. I'm the deputy director with the Office of Statewide Health Planning. And I've brought with me Bill Staehlin, who is supervising structural engineer, who was part of our immediate response.

I'll talk a little bit about how we responded, and Bill will talk a little bit about what we saw as we responded.

Following the event, a number of us either stayed at work or returned to work and attempted phone contact with all of the general acute-care hospitals in the affected areas. We were largely successful in the East Bay and surrounding areas; we were largely unsuccessful in San Francisco proper and in the Santa Cruz-Watsonville areas. We attempted all of the general acute-care hospitals, and kind of a random sampling of the skilled nursing facilities, and made some judgment about the general nature of the damage.

At the same time, we attempted and successfully contacted all of the field staff that's employed by the office, from the Tehachapis north, which amounted to about 14 people, and began to give them instructions to stage in various areas around the damaged areas, in order to field 14 teams of response that has already been described briefly by the fire marshal's representative. That response was assembled to be a four-person team, if you will: a field person from our office, accompanied by a structural engineer — primarily we staffed that with our own staff; we also borrowed some structural engineers from the Office of the State Architect. We also asked that a fire marshal, deputy fire marshal, accompany that team, as well as a representative of the licensing division of the Department of Health Services.

So, those were the four-person teams.

Our intention was to perform basically a rapid assessment. I think that what we learned in this process was that our attention was not well served by the nature of the team and the number of folks that we tried to put into the field. I think we had two principal problems with that.

One was logistics. Trying to get 14 teams of four people each into an area and to understand where they were supposed to go and what they were supposed to do was difficult, as you might well expect, even with some support. We had a helicopter available to us from the medical response operation. But even that really didn't help us, and we lost an awful lot of valuable time in that first day. Secondly, I think the orientation of that team was not in total harmony. We were about rapid assessment, and I think our colleagues from OSA were in tune with us quite well, but our colleagues from the fire marshal's office and from licensing were not really in tune with us. And an analogy that I've been using, I think with some success, as I discuss this problem with the people in the health care business is that we were interested in a triage function, and yet we assembled a diagnostic team, so that we had people that were kind of going at cross-purposes. Both the fire marshal and the licensing person wanted to look much more in depth than what we are attempting to do. So, I think we learned a very valuable lesson there.

What we have done in response to our lessons that we've learned is assembled a little group, a task force, if you will, of ourselves and the principal agencies that we respond with or for, to try to sort out what our response should be in the future, because I think that, for my part, I think we should continue to focus on a rapid assessment, and I think that that's probably best served by a person or two to go in and make the initial first peek. We've got to figure out who those people are and what they would do, and what kind of resources we would hold in reserve and then deploy as needed, based on the rapid assessment that we've gotten together with our colleagues at health services, the fire marshal's office, OSA, emergency medical services, and we've brought in the major health care organizations. We've brought in the Association of Hospital Health Systems and the California Association of Health Facilities, which is the nursing home industry.

We have agreed that we need to streamline our process. Now, we are trying to do the staff work in order to put, then, a proposal back on the table to that task force effort. And hopefully, we will reach agreement had have a much more streamlined response than what we had. I think generally we looked well with our response, principally because the hospitals performed well, not because we had a well orchestrated, well organized response. I was a little bit disappointed in our response, to be perfectly honest with you.

What Bill is going to talk about is what we saw when we got out there. Generally, the things that we saw pretty much made us happy. The things that we are trying to do in the hospital seismic safety program seemed to pay off. That is, the equipment that was properly anchored stayed put, and where equipment failed, they were improperly anchored, either — principally because they'd been there since before the inception of the Hospital Seismic Safety Act.

With that, I'm going to turn it over to Bill, and we'll both stick around if anybody has any questions.

MR. STAEHLIN: Thank you.

I'll start on this.

(The following remarks were accompanied by a slide presentation.)

MR. STAEHLIN: I just thought I would start out with a general overview.

Some of the equipment that we typically do not review in the hospitals, obviously, didn't fare too well.

These are all labs at UC San Francisco.

This was a bookcase, or a medical records file, actually, at UC San Francisco, where all the contents fell onto the floor. So, you've kind of got a problem if you're the patient with the file on the bottom.

Those cabinets, I believe, were put in pre-occupied, so we did not do anything with those.

That's just a slide that we put in for — so far it conforms with the typical detail that we use for the ceiling applications.

This particular structure is Peralta Hospital in Oakland. It was built in 1927. It's a seven-story, concrete rigid frame, with a concrete infill in it. We were rather concerned about the facility because there had been some reports done previously for Peralta that indicated that the frames would yield and shear at about 7 percent g. So, you can see all the shear walls — or all the panels on the infill had classical diagonal shear cracking in them.

Something we noticed, that the exterior corner panels didn't, and I'll show you why here in a second.

This is the lower level of the same seven-story building.

None of the exterior walls cracked because that diagonal crack showed up in the floors that went clear through, and it turns out that the slabs were about 7 inches thick and nonreinforced. So, as that broke, there was no way for the shear to transfer into the end piers.

We were concerned, like I said, because of the extensive cracking of the infill, and we had the — we had that building evacuated and an adjacent four-story building on the other side of it, for fear of collapse of the seven-story building with a substantial aftershock.

That was the expansion joint between the seven-story tower and the four-story building adjacent.

This is in the stairwell of the seven-story tower.

This one was the trace of a piece of equipment at Dominican in Santa Cruz, over in Santa Cruz, up on the penthouse. I thought it was rather interesting. You don't get to see an equipment trace very often.

COMMISSIONER IWAN: Why is it red?

MR. STAEHLIN: Well, they had painted the floor green, and so the red was the primer.

COMMISSIONER IWAN: Oh, okay.

MR. STAEHLIN: And so, the equipment had just jumped all around and scraped all the green paint off and left the primer exposed.

COMMISSIONER BOLT: I thought it was blood.

MR. STAEHLIN: This was a diagonal sway brace for a trapeze of electrical conduit that was up in the same penthouse where that previous slide was taken.

We're noticing that a lot of those little braces that are shown in NFPA 13 are used throughout the facilities. I don't like them. I don't think they work, and I'm gathering information to prove that.

This was again at Dominican Santa Cruz. The upper element that you see there, this triangular shape, is a two-story piece of structural precast, sitting on top of a cast-in-place wall. So, the contractor just took his 5-pound sledge and knocked the bolt over to get it to fit — to get it to fit for the erection of the precast, and then when the upper unit tried to resist the overturning forces, it just straightened the bolt out and spilled the concrete off below. That happened probably about 60 or 70 places around the entire building.

That was some hammering, same time — or same location, Dominican Santa Cruz, between the hospital building there on the left, and on the right is an exterior stair tower that comes out and is exposed to the weather.

This doesn't show up very well, and I — you have to excuse my photography. This is Watsonville Community Hospital. There actually is ground rupture there, adjacent to the south wall of the building. It varied from about 8 to 10 inches wide, to a depth that I couldn't determine. I kept looking in the hole and feeling down there, and I couldn't find the bottom.

That extends all the way along the south wall.

Just immediately to the left is the administrative offices at Watsonville. The floor settled about an inch. Right now the geotechnical people are looking at it. They believe they had some localized soil liquefaction, which was noted in the original soils report that was done back in the middle to late '60's. The building was actually built in '67.

I got these from an architect. This is a "before" picture of a breezeway between the hospital and a medical office building. You notice in that one center pane there, that there's a little ripple in the fascia beyond.

And then that happened after the earthquake. I need to show these slides to geology — there's a current thinking that we may have had some surface creep that was starting to buckle the little window-wall system between the two buildings. The cracking there through the corridor is an extension of the previous rupture that you saw at the corner, the outside shot.

That's another close-up of the crack. You can see, to the left, in the upper lefthand corner, a little bit where the floor has settled.

And this was a mobile administrative office at the hospital. It had just dropped off of its jacks. There was no other bracing on it.

This was a little spring clip for the unistruts in the — this was in the engineering shop at the hospital.

This was probably the most significant damage that I'd witnessed when I was down there. That is a 3,000-gallon liquid oxygen tank. You can barely see the cable with the come-along on it that's going back to keep the one tank from falling over.

The man who — the supplier of the oxygen to that facility already has a second tank there in the background that he's getting ready to move in. But there were actually two cables put up to keep the tank from falling over.

We can see there where one of the legs has just actually shifted off the tank baseplate.

There was a broken weld that caused the second leg to shift.

And that's a close-up of the — one of the — I think it was the opposite side or the second leg. What had actually happened was there was a substandard weld. It was too small for the welding to that baseplate, which was about an inch thick, so there was no bonding of the weld material to the base metal.

This was a retrofitted elevator motor, again at Watsonville. Watsonville had paid to have all of the — their four elevators all retrofitted up to the current standards. All four of the elevators failed and were down for about a week, so they were transporting patients on gurneys through the stairwells.

And again, you can see a little bit of the scratching from the trace of the motor as it rotated around up there.

COMMISSIONER IWAN: What was the scale of that motor? How big is that motor back there?

MR. STAEHLIN: My guess is, it would probably be about 5,000 or 6,000 pounds in weight.

COMMISSIONER IWAN: I can't — because I can't see anything in the picture that gives me a sense of scale.

MR. STAEHLIN: Yeah. I know it's difficult. It's about — the motor is probably about 5 to 6 feet long, probably about 30 inches in diameter.

That was — the blue tank is a water-softening tank. And so, it just pulled the pipe threads right out of the support — the support pedestal.

This was one of the mounts for the emergency generator. All the welds had just failed.

That's a spring vibration isolator. And again, all of the mounts failed there, on — this was their backup generator.

COMMISSIONER IWAN: What is the way the failure occurred? Is it — we can't tell.

MR. STAEHLIN: Well, it's difficult to tell, but basically, the spring short-circuited as the unit shifted, and then it dropped, so the spring has actually been broken.

COMMISSIONER IWAN: Do you think it shook hard enough that it actually crushed the spring in the place where it broke?

MR. STAEHLIN: It — well, it would do what I would call a short-circuit, where the spring gets bent. And it's one of these — you know, it gets bent and it broke before the spring was able to spring out and, you know, fly across a walkway or something, which is what happened here.

This is a roof-mounted equipment, and you can see the spring, just below the vibration isolator, and then, to the left, underneath the blocks that they'd already put up underneath that unit, is part of the cast housing. Every piece of equipment at this facility was lost due to the failed vibration isolators. And again, they were put in back in the '70's. They're substantially smaller than what we would be looking at now.

COMMISSIONER IWAN: They're not using snubbers or anything like that on them?

MR. STAEHLIN: These were not using snubbers. These were a self-contained, snubbered isolator, if you will. It's a combination of the isolator and the snubber, with the housing.

That's another piece of the equipment.

These are some liquid oxygen — or these were nitrous oxide tanks that fell over, at Peralta again.

It's difficult to see. That's an engine generator in San Francisco. You can just barely see the end of the tape measure there, off to the left of the head of the microphone. As the earthquake hit, the generator rocked, caused the isolator to rock, and it actually bent the baseplate of the isolator. So, you can see the gray-colored concrete there around the red or the painted slab.

These were some bookshelves that aren't in very good shape. This happened at four or five different facilities that I'm aware of. All the contents were on the floor. They had already been cleaned up by the time our people had gone through, and we were able to get the pictures.

And that's it.

CHAIRMAN CLUFF: Well, are there questions?

COMMISSIONER IWAN: Maybe to follow up a little bit on the equipment.

I think you said that the equipment supports that you showed were — these were old style, they were not new.

MR. STAEHLIN: Correct.

COMMISSIONER IWAN: So, presumably, there was other equipment in the same hospital, or adjacent, in other words, that was subjected to similar loads that was okay?

MR. STAEHLIN: No, that — the particular hospitals down in that — in that part of Santa Cruz County were all old equipment. They had not done any retrofitting.

COMMISSIONER IWAN: Okay. So, you don't have any good models of things that behaved successfully that were —

MR. STAEHLIN: Not in that area. There are models of other facilities, up into Santa Clara County, that performed admirably.

COMMISSIONER IWAN: They probably weren't shaken as hard, even.

MR. STAEHLIN: Probably not. But, you know, the ground-shaking was so erratic in the area, based on the soil conditions.

COMMISSIONER IWAN: And I wondered — just curious about the motors on the elevator. Were they just — how were they anchored down?

MR. STAEHLIN: Originally there was no anchorage, and then it — and I saw the same thing in Whittier. Apparently, the anchorage then was they came in with some kind of a collar, and they just lifted the motor up, put the collar underneath, and it had a little cap on it, and then they put it down, bolted it back down with two expansion anchors.

COMMISSIONER IWAN: That was the way they had retrofitted it?

MR. STAEHLIN: Um-hmm.

COMMISSIONER IWAN: And that didn't work.

MR. STAEHLIN: No.

COMMISSIONER IWAN: Okay.

MR. STAEHLIN: And then the — we had other problems with the elevators throughout the six-county or five-county area that we're working on now.

CHAIRMAN CLUFF: Further questions?

(No response)

CHAIRMAN CLUFF: Thank you very much.

The last presentation for today will be the Department of Industrial Relations, Laird Fort, senior safety engineer.

MR. FORT: Thank you. I was asked to appear before the panel and speak about our elevator safety orders and the division's efforts to bring these orders into effect in 1975, the date of adoption.

The orders were originally — the need for the orders was the result of the 1971 earthquake in San Fernando. Our program required we develop the orders and brought the orders into effect in 1975, establishing a standard for new elevators and the retroactive orders for the existing elevators.

At that time, there were probably some 52,000 units within the state. Of those, about 30 percent of them, maybe 15,000, 16,000, were cable elevators. These are the elevators of most concern, the elevators addressed by the safety orders. Today, that 15,000 would be approximately 21,000, with a total of 70,000 units in the state.

The orders themselves were primarily developed to ensure that — or not "ensure," but to protect the people and attempt to avoid injury in the people. Viewed in that light, I — we do not have a reported injury related to our elevator equipment. So, it would appear that the efforts made by the elevator industry and the division's efforts to require this work be done, people have indicated a good job done.

We do know that there are some areas where we need some additional work, and we are attempting to gather statistics, and we'll use those statistics to consider the adoption of the national standard, A 17 standard for elevators, which is the result of the division's efforts in '75. The national committee went on another three years and refined that standard.

We will view the statistical information that we receive through Stanford University, through the efforts of Elevator World and our own efforts, hopefully have a meeting in — I would guess about two months, and develop a better idea of how well our standards held up and took care of the potentially damaging and injury-causing elevator equipment.

I think, just with the hour in mind, that I'd perhaps respond to any question you may have.

CHAIRMAN CLUFF: Yes. Thank you.

You mentioned there weren't any injuries. Were there any failures in terms of the equipment?

MR. FORT: Oh, yes. The — there were failures. Some of those failures were the result of a — what we call the 8-pound guiderail, a guiderail that was very commonly used prior to the 1975 orders for the guidance of the counterweight. The orders as adopted in 1975 set a standard up for new equipment that would pretty well preclude the use of the 8-pound guide and caused that to go to a 15-pound guide, which is three to four times as strong as the — and can resist motion, three or four times —

CHAIRMAN CLUFF: Were those failures a surprise to you?

MR. FORT: The failures, no. We did expect some damage to the existing guide, the 8-pound guides. There were additional tie brackets and bracketing to the 8-pound guide, but the 8-pound guide is inherently rather weak.

I don't believe that — I'd rather see the statistical information come back. I don't believe that it's cost-effective to even, at this time, go back and attempt to retrofit those guides, but I do believe that we ought to view that as a special case and study that particular area.

CHAIRMAN CLUFF: Now, most of these elevators were in large buildings in the cities. Is that correct, a majority of them?

MR. FORT: Yes. San Francisco, Oakland, and then the cities in the peninsula.

CHAIRMAN CLUFF: Do you regard the level of shaking a true test of those facilities?

MR. FORT: I don't — I personally don't believe so.

CHAIRMAN CLUFF: Yeah.

MR. FORT: I don't think that the — we did have some damage. The building I'm in was damaged. The elevators in the other state building in San Francisco were damaged because of the 8-pound guides. But I don't think we had a true test of the elevator equipment.

CHAIRMAN CLUFF: So, are you satisfied with the performance of the equipment? It lived up to your expectations?

MR. FORT: Yes, but I do believe that we will want to resurvey the older equipment with the 8-pound guides, once we get our statistical information back.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: You referred to the national code. I don't know if that's exactly what it's called, but what are the major differences between the California code order and the national code that's been worked out, which has not yet been adopted by California?

And I guess my second question is, why hasn't California adopted the national standard?

MR. FORT: Major differences, they — both codes require strengthening of the rail. Both codes would require electrical systems that would sense a problem and cause the elevator to go to the floor and shut down with the doors open. Both codes would require additional bracketing to keep equipment from tipping over or from leaving its baseplate, keep cables from snagging or leaving the guide shivs, as we call it, likened to a pulley.

Their standard is a little more in-depth in that it better defines the rail system so that you can use engineering calculations and carry a problem all the way through. They require a little more detail in the electronic systems. They would require that a sensing device to sense the earthquake, as well as a device called a derailment detector, be installed on each elevator, or give one sensor for the building and a derailment device on each counterweight. They go into the hydraulic elevator in a more extensive manner.

I believe we would have gone this — we would have gone with all of these recommendations had we had the extra three years to continue on with the program. Our mandate was to get the elevators hardened and get a set of orders, and that was done in '75. Their orders were adopted, I think it was 1978, or perhaps '79 is an enforcement date.

COMMISSIONER IWAN: I guess my question — it's been ten years since their orders were effective, and they did have the benefit of the extra three years, but it's my understanding that California has not gone back and made any attempt to adopt those, and I just wanted to know what the reason was. If they're admittedly better, why are we second-class in California compared to the national standards?

MR. FORT: I think what — there's two possible problems here. One is, it's difficult to write code with the personnel — there is not a number of people who are willing to get into the code-writing efforts. I'm perhaps phrasing that wrong. We've lost a number of personnel with the Golden Handshake and so forth. That's one part of the problem.

The other part of the problem is that there's been an effort to adopt the entire A 17 standard as it the code for new elevators for California. This would automatically bring in that Appendix F, as they use it, as the standard for earthquake — earthquaking of elevators. We have — we have been — our efforts have been put into — we need more personnel to get all of the — all the jobs done.

COMMISSIONER IWAN: Has anyone opposed bringing in the new standard?

MR. FORT: I don't believe so, at this time. I don't —

COMMISSIONER IWAN: Can the Commission help in doing that, then? I guess I'm still not quite sure why we're not doing this, if we have something there that enables people to engineer these things in a better way and so on. It's not clear to me why we haven't taken any action in just adopting that, actually.

MR. FORT: Well, we have taken some action, but it's very, very laborious and very slow work. We need some additional people of a type that we just can't — we don't have the people to draw from, the people who are comfortable with the writing of standards and the assessing of information. They're limited in numbers.

COMMISSIONER IWAN: That's a good question. How many counterweights came out of the guides, do you know?

MR. FORT: In this quake, we don't have that information now. I could answer that for —

COMMISSIONER IWAN: How will you get that information?

MR. FORT: We're — we've sent a survey sheet out. A professor from Stanford has also — is attempting to make an independent survey to gather just that type of statistical data. Elevator World is a national — international journal for the industry — has sent out Anshel Schiff's — the professor from Stanford's — questionnaire to all people who subscribe to Elevator World. We do expect to have a fair bit of statistical information for our use in the relatively near future. I'm confident that will pass, will happen.

COMMISSIONER IWAN: And will you come back and tell us about that when you have the information?

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, that would be excellent information, if you could give that to us at a later date, because we'll be looking at all these issues in more detail, and that would be very helpful.

MR. FORT: I will try.

EXECUTIVE DIRECTOR TOBIN: Can I ask a question?

Does the state elevator program regulate elevators in all the buildings in the state, or is this — do you adopt the standards and they're enforced by local government?

MR. FORT: Well, we have — the division has jurisdiction over all elevators in the state. Within the state, the City and County of Los Angeles regulates, oh, probably 15,000 of the 70,000 that I mentioned. They have a problem that takes care of new inspection and reinspection.

We also — it's not a very actively used program — but work with the certified insurance company inspector to — we will accept their report. So, the only people that are inspecting elevators, other than the division, are the City of Los Angeles and the few that are inspected by the certified insurance company personnel.

EXECUTIVE DIRECTOR TOBIN: How often would one of these groups inspect each elevator?

MR. FORT: The Labor Code indicates an inspection frequency of 12 months. We are running longer than that. We've had a retraining program going on, and we expect to be — hopefully, we'll be up to staff this year, for this coming year.

EXECUTIVE DIRECTOR TOBIN: Yeah. I think we understand the conditions that your department has had to work under in the last few years.

MR. FORT: I wish I did. I'm sorry. I didn't mean to be flip.

EXECUTIVE DIRECTOR TOBIN: Okay. Do you have the — in your data base, for example, all the buildings in the state that would have elevators, sort of called out by building?

MR. FORT: We —

EXECUTIVE DIRECTOR TOBIN: You said you had 70,000 elevators. They're obviously in fewer than 70,000 buildings. Do you know the number of buildings and their locations?

MR. FORT: Not in that sense. The information that we have in the computer is used to help schedule for the next, coming year. So, we know the elevator, we know its location, we know the type of equipment, we know when it was inspected last. But to go back and look for numbers of buildings, we — we don't have that. We have a computer program, and it's — well, we don't have it yet. We had hoped that it would. Before the earthquake, we had hoped that the terminals that they just installed would allow us to enter information. With the new program, we would be able to give that kind of — numbers of buildings, average numbers, height of buildings.

CHAIRMAN CLUFF: Will?

COMMISSIONER PEAK: I think I probably know the answer to this already, but I wanted confirmation on it. Do you have any — does your department have any responsibility for elevators used during construction of a building?

MR. FORT: Yes, sir.

COMMISSIONER PEAK: You do?

MR. FORT: Yes. We — we have an inspection responsibility for the initial setup of that elevator. And this would be the outside construction personnel hoist.

COMMISSIONER PEAK: Yeah. I'm not thinking of the ones that are going to be permanent features, but something that'll be torn down later on. You do have that responsibility?

MR. FORT: Yes, sir.

COMMISSIONER PEAK: And I presume there's a different set of standards for those?

MR. FORT: Yes.

COMMISSIONER PEAK: Considerably looser standards?

MR. FORT: Oh, yeah. The equipment in itself is — for the most part, is very much different. It's termed a rack and pinion, where they have a type of equipment that's not accepted or used for the standard passenger elevator. And there is a whole set of standards within the construction safety orders that is a separate set of orders, in comparison to our elevator safety orders.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Yeah. I'd like to come back to the comment about the shaking not being really a true test of the elevator equipment. And just consider for a moment, what if we did have a true test? Let's say really very strong shaking in a part of the built-up urban areas, say the Hayward — well, the Hayward Fault, for the moment. I know this requires a certain amount of speculation or projection, but at some point I think we're going to need this. If we get the kinds of scenarios of future earthquakes and their consequences, we're going to need that.

Think for a moment about existing elevators, those that have been around for five, ten, twenty years or maybe more, and secondly, of those that are really new, say brand new, or the ones to be installed in the future. The sort of feeling I get from the discussion here of the evidence we got from this earthquake is that shaking in a true test may really cause a heck of a lot of problems with elevators that are — that are in existence that have been around for a while. Do you feel that's the case, first?

And second, what about the brand new elevators or the ones to be installed in the near future under the current standards?

And then, finally, the third question is, can your agency, using your evidence in due course, maybe help us do some projections of what to expect, so we can work on the scenarios of probable consequences of future earthquakes?

MR. FORT: I —

COMMISSIONER SCOTT: I threw too many of them too quick.

MR. FORT: You may have, but I think my basic response would be that the newer buildings are built to greater seismic standards. Our elevators within those buildings will probably perform as well as the building does. If we go back in time, I'm afraid that — my gut feeling is, is that we're going to lose the building, and it won't — there won't be —

COMMISSIONER SCOTT: And then what is the elevator doing?

MR. FORT: There won't be an elevator to worry about, on those older buildings.

COMMISSIONER SCOTT: Okay. What about — okay. What about the scenario question? Could your agency help in the future in doing these things, the projections of what to expect, which is a way of guiding planning for the future?

MR. FORT: I think our — with the stronger buildings being built today, and I think with the elevator standards that we have, earthquake standards for elevators, I feel that we're in pretty good shape. I feel that the national standard would probably round it out and extend it a little bit more.

I — there's one or two things that I personally find that we should — I think we should have done back in '75, and that is build in more means for yearly inspection by the state inspector, or mandate a yearly inspection by the elevator company, and also exercise this equipment on a periodic basis, weekly, monthly, whatever is found necessary to keep this equipment in — well, 100 percent running state.

COMMISSIONER SCOTT: That's something you think we ought to be doing but we are not doing now?

MR. FORT: Yeah. We did not do it then, and I think that it's something that we should seriously think about, should we adopt a new set of earthquake safety orders.

COMMISSIONER SCOTT: Okay, yeah. Thank you.

MR. FORT: It's more true for the fire recall system than the earthquake, but it's true for both of them. Both should have testing features and both should have the ability for the individual inspector to test, and the requirement of the owner to exercise it.

COMMISSIONER SCOTT: Thank you.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Now, again, what's it going to take to do this?

MR. FORT: I think it'll take adoption of an order or adoption of a new set of orders that would perhaps be the A 17 standard for new, very much like ours but beyond —

COMMISSIONER PESTOR: What's it —

MR. FORT: — and additional features.

COMMISSIONER PESTOR: What's it going to take for you to do that? Do you — can you do it on your own, or do we have to tell you to do it? Does the legislature have to tell you to do it? What does it take for you to do that?

MR. FORT: We need people.

COMMISSIONER PESTOR: What do you mean, you need people?

MR. FORT: We need — we need people who are comfortable writing code and —

COMMISSIONER PESTOR: You mean you need staff to write these regulations? Is that it?

MR. FORT: Yes. If —

COMMISSIONER PESTOR: Okay. Now, maybe —

MR. FORT: If I do this —

COMMISSIONER PESTOR: — you could meet with the Department of Finance so you can get the staff to do it or — I mean, what does it take? I mean, you're telling us you need to do something. What do you need to do it?

MR. FORT: I — it's — re-establish priorities. If this is important, we will get the job done. But something else will suffer. It's a matter of priorities, I guess.

COMMISSIONER PESTOR: Yeah. And who's setting the priorities?

MR. FORT: I guess I'm as responsible as anybody for that. We have had a number of personnel in for management responsibility within the Elevator Unit, and I've been in this position I'm in as a staff engineer for some time. I suppose I am as responsible as well as anybody for developing the priorities as we should view them.

COMMISSIONER PESTOR: Are you going to do that?

MR. FORT: Something else with — I believe I will.

COMMISSIONER PESTOR: Are you going to go — I mean, with the Department of Finance, if you need more help, you're going to put in a budget change proposal and get the help to do it, or have you done that?

MR. FORT: No.

COMMISSIONER PESTOR: Are you going to?

CHAIRMAN CLUFF: Tom, would you like to —

EXECUTIVE DIRECTOR TOBIN: Randy, part of Industrial Relations has Cal OSHA in it, and I think we all know the things that have gone on with Cal OSHA. They've been well beyond this Mr. Fort's responsibilities or efforts to affect, and it's created problems for the elevator program, a program that was left in place but affected by layoffs and cutbacks and — you know, over a period of time.

And I think what we have here is a problem that an important earthquake program has been kind of swept up into other programs that, you know, seemingly had nothing to do with earthquakes. And, you know, I think, yes, they do need some outside help. And, you know, the legislature is probably a good place for that, where that help should come from. But it's not because of the — you know, the lack of attention of people within the elevator program. It's been caused by, you know, more agency-level activities over the last few years, all of which I'm sure you're familiar with.

You know, the program is now understaffed. They've had difficulty making the number of annual inspections that are required, which is really one of the top priorities, not only for earthquake safety, but because of fire safety and other concerns. And to sit back and write regulations when you're staffed primarily with engineers and people that have been trained to do inspections is a very difficult and time-consuming problem that's affected a lot of agencies, not just this one.

And, yes, they do need some programmatic help in that way, and they need to add some strength. And, you know — and I — you know, I don't think it's really fair for us to be asking these questions of Mr. Fort. I think we well know —

COMMISSIONER PESTOR: If you've put in BCP's and you've gotten it — the person who was here from Division of Dams has done it. If they need to put in a budget change proposal to do this — the governor prepares the budget. I mean —

EXECUTIVE DIRECTOR TOBIN: Yeah. Randy, this is the agency the governor has tried to kill.

COMMISSIONER PESTOR: I know.

EXECUTIVE DIRECTOR TOBIN: Well, they haven't had much luck getting, you know, budget change proposals through the administration. Yes, it's a big problem, but again, I don't think it's —

COMMISSIONER PESTOR: All I was doing was asking him if he's going to do something.

EXECUTIVE DIRECTOR TOBIN: Well, I mean, I think they — I think they need the support to do that, and they're probably going to need outside support from the legislature, would be my guess, from what I know of the department, in order to do that.

CHAIRMAN CLUFF: Any further questions, comments?

(No response)

CHAIRMAN CLUFF: Good of the meeting, any further discussion?

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: When do we hear some plans about the report that the Commission intends to be writing and so forth? Was that discussed this morning? I missed that.

CHAIRMAN CLUFF: No, it was not. It was discussed at length at the Executive Committee last evening. In January there will be a full report on that. And we went through an outline of the possible elements of that report and how it might be done. And by January, the executive director will give us a report on that.

Any further discussion or items of interest?

COMMISSIONER BOLT: Are we going to have sometime some presentations from the engineers — some engineers? We had seismologists this morning. There's a lot of engineering material out there that needs to be looked at.

CHAIRMAN CLUFF: Tom, could you just summarize what our plans are for the continuation of the hearing, in terms of the next couple of meetings?

EXECUTIVE DIRECTOR TOBIN: Yes.

Mr. Chairman, the next meeting, we will continue hearings on the Loma Prieta earthquake and hear from a number of state agencies. I've already turned back my draft agenda, so I — off the top of my head, I can't remember who they are, but a large number, more than what we had today, are yet to be heard from.

And I hope that that will then complete the bulk of our hearings that are resulting in transcripts for our Loma Prieta earthquake view. The Commission then has to start dealing with the Loma Prieta earthquake report, as well as a very huge workload surrounding legislation. I'm not sure when the Commission has time, but obviously it's up to all of you and the chairman to determine when you want to hold some hearings where engineers come in and talk about research programs or research projects.

COMMISSIONER BOLT: Well, there is some material there that's already been determined about some of the structures. I'm just a little concerned that —

EXECUTIVE DIRECTOR TOBIN: Oh, I'm sorry. I thought you were relating it to the earth scientists today who came in and presented their research proposals, that you wanted to hear similar kinds of consortia research proposals from engineers.

COMMISSIONER BOLT: Some of those grow out of the research that's been done already on the engineering side. Of course, it's a little bit different.

EXECUTIVE DIRECTOR TOBIN: Right.

COMMISSIONER BOLT: But what I'm urging is, I guess, is that sometime soon we have a chance to hear what the engineers are learning about this earthquake and where they want to go with that. To me, that's the biggest of all the programs that we have to support.

CHAIRMAN CLUFF: Any suggestions in that regard, with respect to people who have information? And the time to present it — we'll certainly send that up to the staff, and we'll try to schedule it.

Any further items of interest?

(No response)

CHAIRMAN CLUFF: Motion to adjourn?

COMMISSIONER BOLT: So moved.

CHAIRMAN CLUFF: Second?

COMMISSIONER PEAK: Second.

CHAIRMAN CLUFF: Both of us will say "aye."

(Laughter)

CHAIRMAN CLUFF: Meeting adjourned.

(Thereupon, at 5:05 p.m., the meeting of

the Seismic Safety Commission was adjourned.)

# California Seismic Safety Commission

Loma Prieta Earthquake Public Hearing

## Sacramento

January 11, 1989
Fraternity Hall
Capitol Plaza Halls, 3rd Floor
1025 9th Street
Sacramento, California

**Loma Prieta Earthquake Hearing**
Sacramento
January 11, 1990

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CHAIRMAN CLUFF: Thank you.

With regard — excuse me — with regard to our agenda for today, we have a few modifications.

The 10:30 agenda item will not be presented today, nor will the 3:20 and 3:40 agenda items. So, we will adjust the agenda to accommodate those.

We have a guest with us this morning, Dr. Cardinali, from Italy. Dr. Cardinali is sitting back there in the audience, and he is a geologist with the organization of CNR. That's equivalent to our National Science Foundation. And Dr. Cardinali is involved in geologic and seismic hazards assessments in Italy and development of public policy. And so, he's over here trying to see how we're approaching some of these problems to see what they might learn and make use of in Italy.

So, we welcome you to this program and would be very appreciative to get your comments back on any comments or suggestions you would have for us at the State of California.

Two items under the Chairman's Remarks.

As you recall, there was a meeting last month, on the 20th of December, with regard to the USGS' research program in California on earthquakes, and we had several members of the Commission participate in that meeting. Stan Scott, Bill Iwan, and myself were there, and many other people that work with us on the Commission were at that meeting.

And the purpose of that meeting was to address the issue of the process to help set priorities on what earthquake research needs to be done in California. And while it didn't accomplish the end result, I think some very healthy discussion pursued, and a meeting is being held next Monday and Tuesday, and we will have Seismic Safety Commission representation at that meeting as well, to continue that process. So, we'll keep you informed of those activities.

The Working Group on California Earthquake Probabilities — as you recall, I informed the Commission of its activity since I am a member of that working group — and that group has received a charge from the National Earthquake Prediction and Evaluation Council to update the 1988 report, particularly the — to focus on the San Francisco Bay Area, in light of the interest from the Loma Prieta earthquake.

And a report will be prepared by that group, a final report of this working group, probably in late spring or early summer. But NEPC is meeting today and tomorrow in Berkeley, and so a progress report will be made today at Berkeley, giving the results of the updated probabilities of earthquakes in the Bay Area.

I'm not going to give you those numbers, even though I have them, but I would just — you can read the minutes or the press information, if the press is there when they make the announcement today.

But the probabilities have significantly increased in the Bay Area, based on not just information from the Loma Prieta earthquake, but additional scientific knowledge that's been gathered since the initial assessments were made in 1988. So, we will see a significant increase in the probability of earthquakes, particularly on the Hayward Fault.

And while I have the numbers, and I will share them independently with interested people, I don't think it's appropriate for me to say them before they've had their progress report today in Berkeley.

That's all the information I have under the Chairman's Remarks.

Approval of the minutes. Do I hear a motion for approval?

COMMISSIONER EBERLE: Move.

COMMISSIONER IWAN: Second.

COMMISSIONER KOCKELMAN: A couple of small changes.

CHAIRMAN CLUFF: Commissioner Kockelman?

COMMISSIONER KOCKELMAN: On Page 3, the fourth full paragraph, sixth line, that should read "occurring in the next 30 years." And right before that, it should read "30 percent chance of occurring in the next 30 years."

CHAIRMAN CLUFF: Okay.

COMMISSIONER KOCKELMAN: And in the following line, it probably should read, "San Andreas and Hayward Faults combined have a 50 percent chance."

CHAIRMAN CLUFF: Thank you.

Will?

COMMISSIONER PEAK: This is on Page 12.

Incidentally, I'd like to congratulate whoever recorded all that legislative listings that we had last time and got them down, with only a couple of very minor errors.

But on Page 12, about four lines from the bottom, the sentence, "a Select Committee on Earthquakes was formed in the Assembly with Assemblyman Reyes," it should be Areias, A-r-e-i-a-s.

And then, over on one of our big lists, on Page 14, about three-quarters of the way down, after SB 30x, the next one should be SB 37x, Keene's bill.

And down at the — near the —

CHAIRMAN CLUFF: Could you repeat that? SB what?

COMMISSIONER PEAK: That should be SB 37x, instead of AB 7x.

CHAIRMAN CLUFF: Oh, SB 37x.

COMMISSIONER PEAK: And further down, then, SB 147, Hart, the position, rather than neutral, should be "Watch."

And on SB 411, Greene, the position should be "Support if Amended."

Other than that, they're perfect.

CHAIRMAN CLUFF: Thank you.

Bill again?

COMMISSIONER KOCKELMAN: One more on Page 9. Professor Bolt taught me that these were permanent records, and we should be as careful as we can.

It's in the last full paragraph, fourth line. It's just ungrammatical. It says "knowledgeable about the situation on the universities." It probably should read "on the university campuses" or something like that.

CHAIRMAN CLUFF: Any further corrections?

(No response)

CHAIRMAN CLUFF: I have one minor one on the first page of the minutes, under the Chairman's Remarks, in the second paragraph, three lines down, where it says "Denial of Disaster, co-authored by" — and I'd like to insert "Gladys Hanson, San Francisco archivist, and former commissioner."

Any other corrections?

(No response)

CHAIRMAN CLUFF: All in favor of approval of the minutes, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: The minutes are approved.

Executive Director's Report.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, members of the Commission, I have a number of items that will take some time, and I'll move as rapidly as I can.

In your packets for today, you will find a copy of the Commission's monthly budget report. And I'd just call that to your attention for your review.

The situation remains the same as last month. I think our budget is dominated by unknowns at this time, unknowns in terms of the question as to whether or not there will be any funds that we will receive from outside sources because of the investigation that we did of the Loma Prieta earthquake, as well as the exact costs of the activities that we carried out as a result.

I still consider the budget very, very tight. It will remain that way until some of the unknowns clear up. At this time, we have to be very careful about not encumbering additional monies until we know the condition of our budget for the rest of the fiscal year.

Underneath Tab L in the mailout, there is a draft report that was required by Senate Concurrent Resolution 58, passed by the legislature in — I believe it was 1988. This resolution calls on agencies with responsibilities under the California Earthquake Hazard Reduction Act to report annually on the status of their activities.

The report is due January 1st, but if you recall, in December I mentioned that we would rather hold off because we knew that there would be some substantial changes to the status, or at least the prognosis for changes, because of inclusions in the governor's budget in the State of the State speech, which indeed there are.

I have this draft report for your at this time on the — I believe it's the last page — the last page of the written text, you will note that there is a line in there that says, "The Governor's 1990-91 budget," then, "(insert information from the budget and the State of the State speech)." And we haven't written that language at this time, but I think what we would say at that point will be obvious from the comments I'll make on the next item.

The status report is not one that's exciting or encouraging. We didn't know the events of the last week. I mean, it shows that only 40 percent of the initiatives in *California At Risk* are on schedule, that a number of them are not. That's not to overlook the fact that I think we've made tremendous progress in the state since the earthquake hazard reduction program was put into place.

So, as we'll hear later, the progress on unreinforced masonry buildings, for example, is progress that I think is a very special success for the Commission and for the State of California. The progress on a number of initiatives has been certainly substantial, and some very tough initiatives have been successful.

But for those initiatives that do require money, for those initiatives that require some controversial authority and legislation, the road has been a very tough, rocky, and windy road. And we're — about 40 percent of these initiatives are on schedule.

And I think it's — the report is very clear and factual to that fact, and I would like your approval of that today so that we can amend into it the updated information based on the governor's State of the State speech and budget, and forward this to the legislature.

We believe that legislative committees need to know this information now so that they can consider it as they go through their hearings this year, both on bills that are before them, as well as on the budget matters that they will be considering through this session as part of the governor's budget.

We would — along with your approval, if any of you have some additional comments or find specifics that you would like to change that are within the spirit of the Commission's approval, we will be completing this in the mid-part of next week to forward, and we can certainly accept comments from commissioners, you know, through Tuesday or Wednesday of next week.

COMMISSIONER IWAN: Mr. Chairman, I'd move approval, with the proviso that the commissioners be allowed to make comments and so on that'll be incorporated within the spirit of the comments that were just made.

VICE-CHAIR RIORDAN: Second.

CHAIRMAN CLUFF: Further discussion?

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: I notice that the report speaks of some charts, and there are no charts here.

EXECUTIVE DIRECTOR TOBIN: Well, there's — I believe there's a table of — perhaps it's not a chart — that's, I hope, attached to yours as Page 6 and Page 7. But there are no charts in terms of bar charts or graphs or —

COMMISSIONER BOLT: Will there be charts?

EXECUTIVE DIRECTOR TOBIN: No, there won't.

COMMISSIONER BOLT: So, there needs to be a correction, then, to —

EXECUTIVE DIRECTOR TOBIN: Okay.

CHAIRMAN CLUFF: Any further discussion on the motion?

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, the other item that I would like to add and that we haven't mentioned here, but is something that I would certainly welcome, and along with our transmittal, is to encourage the committees that do have interest in any element of this program to hold oversight hearings on the program. And I'd like very much the opportunity for us to lay out what has been accomplished as well as what needs to be done to carry out the *California At Risk* program.

COMMISSIONER IWAN: Is there a cut-off date at which you want to receive comments?

CHAIRMAN CLUFF: Yeah, next week.

EXECUTIVE DIRECTOR TOBIN: We'll be completing this next Wednesday, so, comments on Wednesday morning would fit in perfectly.

CHAIRMAN CLUFF: Any further discussion?

(No response)

CHAIRMAN CLUFF: All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: The motion passed.

EXECUTIVE DIRECTOR TOBIN: Thank you.

Mr. Chairman, also under Tab L, there is a memo to you regarding the investigation report for the Loma Prieta earthquake. We don't have this in a particular order, so I can't — and mine is the item before — I don't know, for each of you.

The governor, by executive order, gave the Commission $250,000 with the charge to do a comprehensive report on the Loma Prieta earthquake. We have scoped out an approach to this, and what I would like today is to talk to you about the concept of the report and the concept of how we will go about it, seeking your concurrence. And with concurrence and your suggestions, we would then move into the next step, and that would be to bring somebody on board who would be responsible for preparing the report.

The process that we propose is, first of all, that the product would be comprehensive. It would be focused on public policy issues and recommendations for state and local government policy-makers. It will be based heavily on the Commission's transcripts, limited additional investigation by Commission staff and contractors, by the technical reports of many others, individual researchers and organizations, and very heavily on the involvement of the Commission and individual commissioners.

We would like to specify that there be some — that the objectives of the report would be to determine public policy directions indicated by the lessons of the event; and to make recommendations to the state and local governments to improve seismic safety; to identify areas where additional studies or research are needed. The contrast here is that this would not be a detailed structural engineering report, or one on seismology, but draw from those more technical, thorough, scientific and engineering reports, in order to lay out the public policy issues.

After we've discussed this in terms of a concept of what the report would be, I would propose that our next step would be to hire a special consultant. Now, a special consultant is an individual, not a company, who works as though the person would be a state employee, but would be limited in term and not have Civil Service status. I believe the term is limited to nine months.

And this person would then be responsible for fleshing out the concept in more detail, in terms of the contents of the report, its outline, what additional consulting advice that we would need, a schedule, a budget, and the specific details of the project. This person would be responsible for drafting these documents, for monitoring the contractors, for compiling the report, for working with you, for doing the writing and editing.

They would have — the person would work under my direction. We would involve the staff on particular issues, and certainly, as an in-house jury to give advice and to review things that are being done. But we would also very much like to be involving the Commission, both in the concept and the outline and the kind of findings that we're developing.

The proposal is that the Commission's workshop in May be largely dedicated towards working on this report. At that time, there would not be a lot of writing done on the report. But at least in terms of identifying the issues and the subjects to be explored, and the directions and the lessons, I think a lot of that will be becoming fairly clear by May, and allow the Commission substantive involvement in the preparation of the report.

Finally, we would like to complete this by the end of the year so that we could forward it to these decision-makers in January, which, of course, is very good timing when it comes to dealing with the legislature, but it's also, within a year, I think, will still be relatively fresh on the minds of decision-makers statewide in terms of the earthquake threat, because of the Loma Prieta earthquake.

Also, the special consultant limited to a nine-month term, if that person began the 1st of March, that means about the 1st of December, the nine months are up and, you know, we'd better have our work done or we're going to be in deep trouble to finish it off.

And so, this would be both the concept, in terms of what the report would include, as well as the concept of how we have proposed to carry it out.

We invite discussion and critique of this, Mr. Chairman.

CHAIRMAN CLUFF: Questions of Tom about this Loma Prieta report?

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: Are these on?

It's very important, obviously, to set out the parameters for this report, because it will be referred to over many, many years, I'm sure. And so I do hope that we can have some discussion, just to start it.

I think that generally, what the Executive Director proposes seems sound. However, I'm not quite clear to what extent this report will develop what we might call policy recommendations. I see it as a factual account of what happened, in terms of the cities and counties and so on, and the effects on them. And that is very valuable, but I think it's important, at least for me, to know to what extent we go beyond that in this report and make — and try to determine places where improvements can be made and so on.

Now, if that is the case, if this is to go beyond an historical account, then I'm somewhat concerned that the arrangements that we see here, set out on Page 2, are not the kind that enable the Commission to have enough interaction with that policy. It seems to me it's very difficult for a consultant to do that. And while workshops are fine and bringing reports, I've not found that over the years to be very — for the Commission, to be very effective, as a commission, at a meeting like this, in developing ideas on policy, that that works better in committees of the Commission.

When I was chairman, you'll recall, Mr. Chairman, that we had a series of committees, which I put a lot of weight on. That's tended to disappear a little bit, and I don't know at the moment just what committee or committees exist which could play, perhaps, more of a role. But one might be able to do it differently in terms of setting up a special working group of the Commission to work with the Executive Director and this consultant, as this proceeds.

Otherwise, I fear that we'll be trying to do it by sending letters and debate around this large group at Commission meetings. But the thing really hinges on to what extent we want to go beyond a historical document.

CHAIRMAN CLUFF: My recollection was that the purpose of this was to address public policy issues and make recommendations. So, I would certainly think that — I'd like Tom's reaction to your suggestion of a working group of the Commission.

EXECUTIVE DIRECTOR TOBIN: Well, I guess, contrary to Commissioner Bolt, I haven't found the committees on the special projects to be particularly useful, because our commissioners have such tremendous demands on their time, it's difficult to add in additional meetings beyond the Commission meeting.

And so, I've — for something that is of, I think, this importance and that involves really, I think, the judgment and observations of every commissioner, because the impacts of this event are so widespread that it really involves every commissioner, and it seems that the Commission meeting is that sort of one time of the month when we have most all of you in one room, and so it becomes a very convenient way to make sure that we can do that.

The committees mean that we have to select a few people to represent the whole, and, you know, we have only one seismologist on the Commission, or one structural engineer, and one representative of voluntary organizations. And as you start to put together the committee and realize that this was an event that had some very unique lessons in seismology, and some important lessons in structural engineering, and some tremendous questions regarding sheltering, it becomes very clear very fast that we really have a subject that involves every single commissioner.

So, the other alternative would be to have a series of committees that would deal with this. The committees that we do have in place — and we do have about ten — all have very specific charges, and some are more active than others, you know, working on those charges. But they've been largely created around those specific tasks that they have been carrying out, and it hasn't been part of the work programs for the individuals on each of the committees to agree that, yes, they would roll up their sleeves and be involved in it.

So, it's a — it's certainly possible, and the committee chairmen could consider using every one of our committees, you know, in the review of this report.

But, you know, I think you and I both have the same direction, that I would like to see every commissioner involved in this in a substantive way, and not limited to a few.

CHAIRMAN CLUFF: I'm wondering if we might be able to kind of address Commissioner Bolt's concerns when we have the workshop in May. We'll have a better feel for how it's being organized, and then take any action there if — but I totally support our Executive Director's view that every commissioner needs to be very much involved in reviewing it. And we probably ought to make sure that those meetings in October, September and October, are substantially devoted to that document.

Are there other questions?

Bill?

COMMISSIONER IWAN: I was just going to reinforce that.

I think that the May workshop time will be crucial in —

CHAIRMAN CLUFF: Yes.

COMMISSIONER IWAN: — trying to get a concerted input from the Commission.

EXECUTIVE DIRECTOR TOBIN: I don't think — the staff doesn't have, you know, strong feelings on how we do it, one way or the other. I think the concept that we do want to involve everybody is — you know, is certainly something that's strong.

But if the Commission decides we should have, you know, a series of committees, use existing committees, or create a — you know, a new committee of all of those who have volunteered to really spend a lot of time on this, you know, all of those options are certainly, you know, workable, and we'd be glad to do it. There's no reticence to participate in that way at all.

CHAIRMAN CLUFF: Yes, Jim?

COMMISSIONER McMULLEN: I'd like to make sure that the Emergency Response Committee's input is going to be put into the report, so that we have a detailed review of emergency response also. Is that part — I didn't see it on here, Tom, but I presume that's —

EXECUTIVE DIRECTOR TOBIN: No, I haven't mentioned any of the committees, Commissioner McMullen, in here in particular, but certainly, the emergency response aspect of this earthquake is, you know, a real laboratory in how the emergency response works. And, yes, I think that that has to be considered and described in some great detail. There must be some tremendous lessons of great value that have got to be gleaned from this event.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: I'm still not sure that with the best will in the world, a meeting of the full Commission like this is the place that one beats out policy matters. You can turn the Commission meeting into a committee of the whole and relax the formality, so that that kind of thing happens.

Let us take the — say, the strong motion side of this, which is highly technical in part, but does have some public policy implications in terms of what — where buildings of certain kinds have been instrumented and what the public policy is. That's awfully difficult, to develop recommendations sitting around in formal commission meetings.

But what I'm trying to do is to see that all our instruments are brought to bear, including the committees, on this matter, and that there is an opportunity for every committee to take up certain aspects and to bring recommendations forward. That is what I'm suggesting here.

CHAIRMAN CLUFF: Perhaps we could write a letter to the committee chairmen to ask them to make sure that they adopt the concepts, and ask them to begin preparing recommendations that will be part of this report. That would be useful.

Further comments?

Pat?

COMMISSIONER SNYDER: Yeah.

As a further clarification on the process for the report, will the report be utilizing just the information from our hearings, or will there be — I hear you referring to workshops that I was not aware of — will there be more information forthcoming?

EXECUTIVE DIRECTOR TOBIN: Yes. The National Science Foundation and the Geological Survey, as two examples, have commissioned a large number of research projects, some of which are obviously too long a duration to provide results within our timeframe, but many of them will be shorter, as well as we will have access to researchers who are doing that work. And my hope would be that we would be contacting most of those individuals, and certainly reading the materials that have been developed by researchers.

Many organizations, from state agencies through others, will do extensive, detailed reports on their piece of the picture. I mean, we already have reports that came out very rapidly from some private consultants, from the Geological Survey the Southern California Earthquake Preparedness Project did a report, there are after-action reports from many of the emergency organizations that are available. And I would hope that, you know, we will be able to collect everything that's been done in that order, to read it and gather the facts, and get the correct information.

COMMISSIONER SNYDER: I guess that was part of my question, was how do you — how do you determine whether you have, you know, received all of the appropriate reports? And reflecting on Commissioner McMullen's concern with the fact that we capture the emergency response to this, how do we know that we're getting the after-action report from the Cities of Watsonville, Santa Cruz, Oakland, et cetera, you know, the various reports that are in-house, that are within departments?

EXECUTIVE DIRECTOR TOBIN: Well, for reports like that, I think, we know that they're done and we know that we could —

we'll know whether or not we get them or not.

The ones that would be difficult to find, or maybe reports that were done by an organization — to pick an example, and I don't know if they're doing a report, but maybe the California Council of the AIA does a — might do a report, and we may never have known that they were preparing a report or they had done one, and some of those, I think, clearly would slip by.

But if we have a full-time person working on this who is as good as the person would be, I hope, that — we have some ideas of some very good candidates — I think that, you know, we'll be able to make an awful lot of contacts.

I feel a person writing a report like this can't sit in the office in Sacramento and write on an earthquake that happened in Santa Cruz. I mean, there's — they'll have to spend a good deal of time, you know, in those jurisdictions as well, talking to people and following up. And I see our transcripts as a road map to where issues are, who's been involved, and what's being done — not the complete answer.

COMMISSIONER SNYDER: Thank you.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Perhaps that might be a task the consultant or possibly another staff member can do, to sift through those various reports and pick out the various elements that are appropriate to be sent to some of the committees for review and comment. And that might be a way to get various committees involved into the review process.

EXECUTIVE DIRECTOR TOBIN: We have already started organizing the information that's come in, in sort of a file order by topic. And one of the best sources of information we have is the press. And, you know, we have a clipping service that we are clipping newspapers and articles, and there's just a lot of follow-up and details, in terms of individuals who've been involved. And, you know, it's not scientific information; it's more anecdotal than anything else, but it really does lead us into these kinds of directions.

We'll organize it by topic, and that will give us a good entre to involve people in their specific areas of expertise.

COMMISSIONER EBERLE: And we send you copies of our three binders, I think?

EXECUTIVE DIRECTOR TOBIN: That would be very helpful. That would be very helpful.

CHAIRMAN CLUFF: Further discussion?

(No response)

CHAIRMAN CLUFF: Tom, do you need any action?

EXECUTIVE DIRECTOR TOBIN: Well, I guess the important thing is to — Commissioner Bolt raised a question I think we didn't talk really enough about, and that is whether or not the concept of going beyond a factual account to drawing lessons regarding the public policy issues and making recommendations is indeed what the Commission would like to do, because that clearly would affect the type and person that we would be trying to hire. And so, that's — I want to make sure that there's an agreement on that.

CHAIRMAN CLUFF: Well, I'll ask anyone to speak up if they don't agree with that concept.

(Laughter)

COMMISSIONER BOLT: Or hold your peace.

(No response)

CHAIRMAN CLUFF: Hearing no objection, then, let's move ahead.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, the next item is to give you a quick report on the unreinforced masonry buildings program. I think the last time that we met and had a — we talked about this, we told you that there were about 30 jurisdictions in the State of California within Seismic Zone 4 who had adopted mitigation programs, and we expected more by the end of the year. Those expectations have been borne out.

As of this time, 90 — nine-zero — 90 jurisdictions have reported that they have completed their inventories and adopted a mitigation program.

These are numbers from those jurisdictions. If they claim to have a mitigation program done, we count them as having a mitigation program. We're not second-guessing them.

And in addition to that, 65 others have reported to us that there are no unreinforced masonry buildings within their jurisdiction.

So, adding those two numbers, 155 of the 366 jurisdictions with Seismic Zone 4 now have complied with the unreinforced masonry buildings law.

The majority of the jurisdictions are in Southern California, and I think that reflects the leadership of the City of Los Angeles and Long Beach, and the more attention that's been paid to this early on.

According to our information, then, 25 percent have finished their mitigation programs; 23 percent have finished their inventories but have yet to adopt a mitigation program; 21 report that they are now working on their — 21 percent now report they're working on inventories; and there are 13 percent, or 49 jurisdictions, that we haven't heard from.

And those jurisdictions vary in size, and some of them, I'm sure, wouldn't have an unreinforced masonry building within their jurisdiction, but 13 percent, or 49, we have no word from, so we don't know what their status is, but suspect that they haven't made much progress in general.

18 percent of the jurisdictions have reported that are no unreinforced masonry buildings within their jurisdiction.

My impressions on this are mixed. I am pleased with the 90 jurisdictions, very pleased with the 90 jurisdictions. Recognize that when you add the population of those people who reside in those 90 jurisdictions and the 65 jurisdictions where there are no unreinforced masonry buildings, they comprise over half the population in Seismic Zone 4. So, we've made some — have seen some wonderful and significant progress in reducing one of the clearest hazards to life and the economic vitality of California.

I'm also very encouraged that we have 44 percent of the jurisdictions, though they haven't completed their programs, at least they're doing it and they're working on it. And maybe some bit off more than they could chew, or some started too late, but they're working on it. And I think, in time, we're going to see a good number of those coming through with their reports and comply with the law.

Obviously, I'm disappointed with the 13 percent, or 49 jurisdictions, that we haven't heard from. They're letting us down. They're letting their constituents down. We will be in contact with them, and we will find out what the status is and encourage them to do more.

The Senate Bill 547 does — we're going to talk about strengthening it later in our agenda today, but it does certainly require the Commission to report on June 30th or July 1st on the effectiveness of this program. And the effectiveness has to do with whether jurisdictions have done a good job or not, if ordinances — what schedules do they have, do they have standards, good standards or poor standards, do they have mandatory programs or voluntary programs. And we will do that kind of an analysis and we'll have more complete data, obviously, by that time. More jurisdictions will have complied.

So, in summary, we have done a press release. We're issuing a list of those buildings — excuse me — those jurisdictions with mitigation programs today. We're hoping that they will receive the accolades in their newspapers that they deserve, and the jurisdictions whose names don't fall on this list will have phone calls from reporters asking them why. I believe that as time goes on, we'll see more and more compliance with this law.

But as of this time, that's our status.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Excuse me. When I was talking to our Planning and Land Use Department, they were trying to get their program adopted, ordinance adopted, and they said that county counsel, in their review, had said that this ordinance was subject to CEQA requirements and environmental impact review. I personally don't see how. I was wondering if anybody had ever heard that type of a question before.

EXECUTIVE DIRECTOR TOBIN: The City of Los Angeles did an environmental impact report on their ordinance. It's — I've forgotten what the numbers were, but a couple hundred thousand dollars — it was a very detailed report.

The City of San Francisco has also determined that they need to do an environmental impact report, and they're in the process of doing it, for a cost of around $400,000.

Many other jurisdictions have determined that there isn't a substantial impact, and they're not doing environmental impact reports. Obviously, Los Angeles has 8,000 of these buildings, San Francisco 2,000, and both are considering mandatory programs, to where those are significant decisions that could have an environmental impact. And I think the decisions are correct.

You know, other jurisdictions that have fewer, or the kinds of impacts that they would expect are not that substantial, can, I think, legitimately make a finding that one's not necessary. But it's a jurisdiction-by-jurisdiction decision.

COMMISSIONER EBERLE: It can further delay the process, though, with the documents.

EXECUTIVE DIRECTOR TOBIN: Well, yeah, it certainly does, yes.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. One thing is, I think that it's clear that, you know, the adoption of an ordinance is a project under CEQA. It is a discretionary action. And the jurisdictions that may not be preparing an EIR would be preparing a negative declaration. So, in any event, there is, you know, a requirement to comply with CEQA, because it is a discretionary decision.

COMMISSIONER EBERLE: Okay. Thank you.

CHAIRMAN CLUFF: Tom, I'd like to ask a question.

In our hearings throughout the various cities that we've had our hearings, where we discussed the unreinforced masonry issue, I think every one of them pleaded with us to do what we could to make this mandatory, not just voluntary. Is there legislation moving to accomplish that? And what's —

EXECUTIVE DIRECTOR TOBIN: That's later on in our agenda, yes. Yeah, as to what we should do.

CHAIRMAN CLUFF: Okay.

Any further questions or discussion on this point?

(No response)

CHAIRMAN CLUFF: Do you need any action?

EXECUTIVE DIRECTOR TOBIN: No.

Mr. Chairman and members of the Commission, I have, this morning, personally Xeroxed copies of the governor's State of the State speech for all of you, and I don't think they made it here, and I apologize. And somehow, we will get these for you before the meeting is over.

But let me summarize very briefly, for those of you who didn't hear the speech. The governor's statement is — his speech is one that, on an earthquake scale, I would rate a magnitude 10. I mean, it's clearly the most important policy statement for earthquake safety that's been made by a governor at any one time in the history of our state.

He has proposed a series of actions that will help us carry out *California At Risk*. These include endorsing spending $350 million on general obligation bonds to strengthen state-owned buildings; it includes going ahead with the site acquisition and construction of a Southern California emergency operations center for the state, both of which are top priorities in our *California At Risk* program. It includes the inspection of state buildings and of private schools. It includes the creation of an emergency medical services medical mutual aid program. It includes purchasing communications equipment so that we'll have communications capacity after an earthquake. It includes the purchase of equipment for urban heavy rescue.

These are all top priority items, each one of which is a difficult matter to carry out, and most all of them are relatively expensive. And they have been included in the governor's State of the State as well as in the state budget, which we haven't had a chance to review yet, at this time.

The governor also had a surprise — and those weren't necessarily a surprise, I should say, because I'd been — the governor, in July, called on the director of the Office of Emergency Services and ourselves to work with other agency heads to put together a list of earthquake projects that the governor might consider for the State of the State. And we proposed, in July, a list of nine items. And I think he's taken seven of those nine items in pretty much priority order and put them into the budget.

And so, that wasn't a surprise; it was something that we worked on this summer, and because of the governor's interest at that time in doing something this year on earthquake safety. It wasn't a reaction to the Loma Prieta earthquake, although I'm sure that that helped.

He also had a surprise for me and for many of us, and that is, the governor has called — and I'll read his language — he said,

> "No earthquake rebuilding effort will be complete or responsible until we make earthquake insurance coverage a mandatory feature of all policies written for at-risk, privately-owned buildings. I'm asking the insurance industry, the business community, and the legislature to

work with me to develop a practical plan to achieve this goal this year."

And that's, obviously, a very ambitious, exciting policy initiative that could have tremendous benefits in reducing earthquake hazards.

The governor's cabinet secretary asked me the day before yesterday to make sure that our Insurance Committee knows that the governor knows that we have an Earthquake Insurance Committee, that he would like to hear from the Earthquake Insurance Committee in terms of their views on how this could be carried out, to recognize that time is of the essence, that we want to accomplish this this year, and to move ahead with it as something that — this and other initiatives mentioned in the State of the State speech as a policy statement are all matters that the governor personally is very much committed to.

This is part of what I would like to see reflected in our response to Senate Concurrent Resolution 58. Though we've made progress, we're behind on so many of the initiatives. We have now started very rapidly, very dramatically, and very forcefully, on a number of the most important ones. And I think this policy statement by the governor, as well as the tremendous interest in the legislature over a variety of things this year, it's going to mean great advances.

And I think, as we talk about it later, in addition to this policy statement, the legislature is considering some policy measures that are of absolutely monumental importance this year. So, the next nine months are going to be historic in the matter of earthquake safety.

And I will have full copies of this State of the State speech for you later on.

CHAIRMAN CLUFF: Yes, Bill?

COMMISSIONER WASTE: It should probably be noted, after Tom's comments, that recognizing the great urgency of this insurance issue, the committee met yesterday as the papers were being published on the streets. So, how's that for promptness?

CHAIRMAN CLUFF: Tom, do you have other —

EXECUTIVE DIRECTOR TOBIN: I have. I apologize for the amount of time I'm taking. I'm having such a good time, Mr. Chairman.

The May — the workshop is scheduled for May, and I understand that we have some important conflicts with the regularly scheduled meeting date, which I believe is May 10th and May 11th, for the two-day workshop. The proposal would be to change that two-day meeting, that workshop meeting, to May 17th and May 18th, which would be the Thursday and Friday of the following week.

I know many of you commit to schedules months and months in advance, and I would like to know if that would work. It would be a two-day meeting in Sacramento, really as a low a budget meeting as we possibly could have.

We have a — Commissioner McMullen has a conflict.

COMMISSIONER BOLT: Yes. I'm not available that week.

EXECUTIVE DIRECTOR TOBIN: You're not available either week, then, right?

COMMISSIONER BOLT: Oh, yes. The first week, the 10th, but —

EXECUTIVE DIRECTOR TOBIN: There's a — the SEED Memorial is on the 10th and 11th.

COMMISSIONER BOLT: That's right, yes. Oh, I see.

CHAIRMAN CLUFF: Yes. That was —

COMMISSIONER BOLT: See, I'm around that week, but the following week I have something else.

CHAIRMAN CLUFF: But the day we would have it would be the two days of the SEED Memorial at Berkeley.

COMMISSIONER BOLT: Yes. That's — I couldn't. It's impossible, yeah.

CHAIRMAN CLUFF: Right. So, both you and I are deeply involved in that.

COMMISSIONER BOLT: But the following week, I —

EXECUTIVE DIRECTOR TOBIN: You're out the 17th and 18th, as is Commissioner McMullen.

COMMISSIONER BOLT: Could we put it the week earlier?

CHAIRMAN CLUFF: That's the Seismological Society meeting in Santa Cruz. Yes?

COMMISSIONER McMULLEN: I'm available the following week, the 24th.

COMMISSIONER SNYDER: I'm not available. The 17th and 18th, but not the 1st.

EXECUTIVE DIRECTOR TOBIN: The week of May 24th and 25th is the annual — the national EERI meeting.

COMMISSIONER BOLT: Perhaps we should revisit it.

EXECUTIVE DIRECTOR TOBIN: We will — right now, the Commission meeting is still scheduled for May 10th, and we'll try to find a workshop.

COMMISSIONER BOLT: I hate weekends.

EXECUTIVE DIRECTOR TOBIN: Okay. All right, then.

Mr. Chairman, that was a nice try.

I also want to call the Commission's attention to a conference that's being scheduled — I guess it's hosted — I'm not sure entirely, but I think it's hosted, certainly, by FEMA, and I believe by OES as well, on the lessons learned from the Loma Prieta earthquake. It's an international conference, and I believe the State Department is inviting representatives from a number of nations.

That will be held on Wednesday, February 7th, Thursday, February 8th, and then, on Friday, the 9th. It will be held in San Francisco, as far as I know, but I would like you all to know of that workshop.

The last item, Mr. Chairman, is just to call your attention to an item that should be in the packets. This is a letter to Senator Ayala informing the senator that the Commission has not been able to prepare the model recovery program called for by legislation that was signed into law in 1986.

At that time, the resources for doing the report were deleted from the legislation, and our attempts on at least two occasions to have budget change proposals for the work have been denied. And we have informed the leadership and the senator that, for that reason, we've been unable to do it.

I also would expect that Senator Ayala will try this year to insert the funds in the budget as it goes through the legislature. That's a decision that rests with him, and I haven't heard what his response is.

I personally feel badly that we've been unable to do this, but I know that you all probably remember that when the budget change — when the money was deleted, we made a decision as a commission at that time that we had to have the resources in order to do the report, and that rather than taking on something that we couldn't do well, or diverting the Commission's already priority programs, would be an unwise matter to do.

So, it's a decision that we've made, full well knowing that we had to have the resources to do it. But I wanted to call your attention to that.

Mr. Chairman, that completes my remarks.

Oh, I — no, that doesn't complete my remarks. Sorry.

Another issue that has come up, really quite recently, and that is a matter that deals with independent review of, in particular, one example of importance now that Commissioner Fratessa may wish to mention, has to do with an independent review of CalTrans' retrofit measures — or not retrofit measures, but repair measures and possible retrofit of damaged freeways.

The Embarcadero Freeway in San Francisco is one of particular interest in the engineering community at this time. And maybe Commissioner Fratessa would like to expand on that.

COMMISSIONER FRATESSA: Yes, I would.

Just recently, in the last couple of days, there's been quite a bit of information in the press that they are going to do a retrofit of the Embarcadero Freeway. I don't want to comment on the details of that, but I do think it's imperative and consistent with the Commission's action, for instance, with the Department of Corrections, that any time we're dealing with a high degree of public safety, that the standard of care is to have a public agency peer review the design. And in particular, if you get into the very intricate retrofitting of a bridge structure or an overpass structure, that is state-of-art in the engineering profession that calls for peer review.

And I would hope that this Commission, because this seems to be a hot item, would write a letter to CalTrans talking about our desire to see that done because it is a critical public safety issue, and strongly urge them to have — and these are the key words — an independent peer review by structural engineers expert in seismic design.

COMMISSIONER SCOTT: I strongly support that idea.

COMMISSIONER IWAN: Have you made a motion?

COMMISSIONER FRATESSA: I'll make that in the form of a motion.

COMMISSIONER IWAN: Second the motion.

CHAIRMAN CLUFF: Two seconds. That seconds it.

Any further discussion?

(No response)

CHAIRMAN CLUFF: All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(No response)

CHAIRMAN CLUFF: Motion carried.

EXECUTIVE DIRECTOR TOBIN: That's it. That concludes my report.

CHAIRMAN CLUFF: Thank you.

COMMISSIONER FRATESSA: Then you will be writing, rapidly, a letter? I think that needs to be done quite rapidly.

EXECUTIVE DIRECTOR TOBIN: Yeah.

CHAIRMAN CLUFF: The next agenda item —

COMMISSIONER KOCKELMAN: Mr. Chairman?

CHAIRMAN CLUFF: Yes.

COMMISSIONER KOCKELMAN: Excuse me.

There's another item under Tab L. It deals with conflict of interest?

EXECUTIVE DIRECTOR TOBIN: Oh, yes. Mr. Chairman, I included that in your packets for information only, with no action intended by the Commission at this time. And I thought it was important, since Commissioner Kockelman had raised it at the last Commission meeting, that we have our legal counsel write a memo on the issue so that it's not one that is one that we dealt with in sort of an aimless manner.

So, yeah, it's there in the packets. I'm sorry for not calling your attention to that.

CHAIRMAN CLUFF: You didn't want to say anything, Bill?

COMMISSIONER KOCKELMAN: Yeah. I'd like to discuss it.

CHAIRMAN CLUFF: You'd like to discuss it. Then discuss it.

COMMISSIONER KOCKELMAN: Thank you.

I think the staff is to be complimented for addressing a sensitive issue so quickly, and I think it's well-reasoned. The staff's wording is — much of it comes from the state statutes or codes. It's become kind of increasingly important, and the reason is the Commission staff and members are having higher and higher visibility. For example, there was a recent San Jose Mercury special section called —

CHAIRMAN CLUFF: Bill, could you move the microphone a little closer?

COMMISSIONER KOCKELMAN: There's a new special section in the San Jose Mercury-News, and four or five of the commissioners are prominently, you know, displayed in there. And the issue is entitled "We Are Not Prepared."

I think the importance kind of falls into four categories, and I'll be very brief.

One is the higher visibility of the Commission members and staff.

Two is the staff and commissioners should be concerned about the wording in the memo, namely, avoiding the mere appearance of interest that can severely compromise the credibility of the Commission.

Third, the last three years, there's been a certain amount of effort to have the Commission begin administering research and reduction grants. Sometimes the figures have been like $5 million per year.

The fourth item is, I'm rather surprised that the Commission hasn't already adopted such a property. In this particular memo, under Tab L, on Page 3, the staff makes a recommendation. They suggest that the Commission, to avoid "even the mere appearance of a conflict of interest," should "employ the following procedure." I think that's worthy of discussion and worthy of some kind of action.

CHAIRMAN CLUFF: Further discussion? Dan?

COMMISSIONER EBERLE: How does this compare to the conflict of interest thing that we sign every year in March?

EXECUTIVE DIRECTOR TOBIN: That's a disclosure of economic interests. It's required in part by the same statutes, but it requires that economic interests of any significance be declared and filed. And actually, that's one thing that will be coming to you at the next meeting again, that your annual reports will be due.

CHAIRMAN CLUFF: Further comment or discussion?

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, I agree that if the Commission wants to adopt this, it's a matter that should be, you know, carefully considered, and we should agendize time for the Commission to be able to discuss it in some detail and carefully and prepare for it, because it is, I believe, an important issue. The credibility of the Commission and government in general is something that is of great interest and importance.

I think that the general thrust of what we've said here is to — we would like to see the Commission have a very high standard. The conflict of interest laws apply very directly to matters of financial interest and to whether or not you have financial benefit. And I have always been very proud of the Commission, its committees and other groups associated with the Commission, that we have adhered to a high standard and that commissioners have not been involved in contracts and making decisions where there's a personal financial benefit.

And I think this is an important matter that the Commission should discuss. You know, I don't know that we're prepared to discuss it right now in great — in great depth, as it probably does require.

COMMISSIONER KOCKELMAN: Well, let me close by saying the wording is all quite familiar. The ethical grounds, I can't imagine any commissioner isn't quite comfortable with. Three, I would just have assumed that we'd already adopted such a thing. But since we haven't, I would so move that the Commission adopt the recommendations, the procedural recommendations, on Page 3 of the staff's report under Tab L.

COMMISSIONER SNYDER: Second.

CHAIRMAN CLUFF: Further discussion?

Paul?

COMMISSIONER FRATESSA: I wish I'd known that we were going to bring this up, because I have some editorial problems with the wording of that. And maybe it's just my own point of view, not necessarily my profession, but I would prefer that we have an opportunity to think about that discussion and agenda a discussion of that at a later date, because I would like to be prepared and provide detailed comments.

VICE-CHAIR RIORDAN: I think, Mr. Chairman, that — if I might — I would agree. I don't know if our attorney is in the room today, but it seems to me that, you know, some of us may want to have time to review it. I certainly want my county counsel to look at this before I, particularly, make some sort of a decision.

We all are faced with these — I don't know if this is any different than what our county operates by, but, I think, a little time to review it. And because it's not noted as necessarily an action item, I believe it is wise to set it over and to have that time to review.

COMMISSIONER KOCKELMAN: Mr. Chairman, if Commissioner Snyder would so agree to withdraw her second, I'll withdraw the motion, with the idea that we would pick it up at the soonest possible Commission meeting.

COMMISSIONER SNYDER: I agree.

CHAIRMAN CLUFF: Fine.

Bill?

COMMISSIONER IWAN: In that regard, I think Commissioner Kockelman raised an interesting question, and he referred to some contracts and so on. It seems that this document refers primarily to commissioners, and I wonder if we do consider, at some future time, it might be appropriate to expand that. And I'd be interested to know what responsibilities committee members of Commission committees have in that regard. And maybe we could flesh that out for our discussion as well.

CHAIRMAN CLUFF: Any further discussion?

Bill?

COMMISSIONER WASTE: I'm certainly in agreement with the concept of what we're discussing here. I think it's very important. But I would like to see some specific recommendations as to wording. As I read through this, it is more a general statement that we're looking at, and I think we need to look at a specific recommendation for a specific code of ethics or whatever it is that we're going to adopt.

Could that — could it be reduced to that by staff, so that we were acting upon specific wording?

EXECUTIVE DIRECTOR TOBIN: We could try. I think the difficulty is, is that what constitutes a benefit can be in a variety of different fashions, and to cover all would be very difficult.

I think one of the points that we tried to make in this memo is that it's a judgmental decision in many cases, and that it's a judgmental decision that I think that individuals have to make. It's very difficult for — and certainly impossible for the staff, or perhaps an individual commissioner, to prove that somebody else has a conflict of interest, you know, unless it's one of the — you know, it's something very clear-cut, like you're a member of a consulting firm and you're trying to get a contract from the Commission. That becomes black and white, but in other cases there's an awful lot of gray area. It requires — it requires judgment.

COMMISSIONER WASTE: Well, would the motion be for the adoption of the memo as a sense of direction, or certain parts of the memo containing specific wording?

COMMISSIONER BOLT: The motion's been withdrawn.

COMMISSIONER WASTE: I know.

EXECUTIVE DIRECTOR TOBIN: There's no motion on the floor.

COMMISSIONER WASTE: But it's going to come up again. I think, when it comes up again, we need to have a specific proposal that we can act on.

EXECUTIVE DIRECTOR TOBIN: I think there should be an adoption of some specific language that would serve the Commission as a whole.

COMMISSIONER WASTE: Yeah. That's my point.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: In connection with our review of this, I'd just like to be sure that we have an opportunity for a pretty good, thorough discussion of this with our staff counsel, Tim Cronin, of the implications of this, and perhaps seeking other legal counsel as well.

CHAIRMAN CLUFF: Fine. I think that's all the discussion for now. We'll take that up further.

COMMISSIONER UMEMOTO: One quick addition —

CHAIRMAN CLUFF: Yes.

COMMISSIONER UMEMOTO: — if the motion would include, just for our reference purposes, all state laws regarding this, so that everyone knows what the state law prohibits in terms of conflict of interest, and then it would be actually spelled out to us on the, actually, legal end that we're still bound by, and then also re-emphasizing that that language is —

CHAIRMAN CLUFF: We can't hear you very well, Keith.

COMMISSIONER UMEMOTO: Sorry.

I just wanted to comment that I think we should include language that is in state laws, just to reiterate it for the Commission's purposes — commissioners' purposes, so that we all know what the state law language is.

CHAIRMAN CLUFF: Yes.

Okay. Moving on, the next item is our 9:30 agenda item, University of California building retrofit program.

President Gardner and his group is here, if we could invite President Gardner and whoever else up to the table, we'd be pleased to have you here.

Grab another chair. I think there's three of you.

We did, at the beginning of the Commission meeting, make some changes in the agenda, so you weren't here to hear that, but we have eliminated some agenda items further on so we could accommodate the time. And the 9:30 time, for a half-hour, is for any formal presentation, President Gardner, you and your group would like to make. And then we would have time following that to have questions you'd like to have asked or we would like to ask of you.

So, we welcome the University of California President's Office here. And we are pleased, President Gardner, out of your busy schedule, that you've chosen to take time to come and address us today on a very important matter.

And it's my goal to have this agenda item help us clarify some — what I think have been some misunderstandings, and that we leave here in a very positive, cooperative partnership in moving in a more aggressive way in improving seismic safety at the University of California.

PRESIDENT GARDNER: Well, thank you, Chairman, and members of the Commission. It's an especially appreciated opportunity for us to be here, to be afforded time on your agenda to share with you our current circumstance and plans, and then, of course, as you wish, to respond to your questions and interests.

I am scheduled to testify by telephone in a court proceeding at 11:00 a.m. I'm attempting to put it to 1:30. If I'm successful, I'll be able to be here throughout the question period, if it should extend that long. It's my hope to be able to be here for that.

Chairman Cluff and members of the Seismic Safety Commission, we welcome the opportunity to discuss previous actions of the University of California with respect to our seismic problems, as well as our current plans to address seismic safety at all of the University of California's facilities across the state.

The Chairman has personally conveyed to me the strong feelings of this Commission about the University's efforts, and has shared relevant excerpts from the minutes of your December 14 Commission meeting, which I have read.

Before we address your specific concerns, let me first assure you that we consider seismic safety to be of utmost importance. I am personally committed to moving as expeditiously as possible to correct seismic and other life safety hazards in University facilities, and I'm committed to ensuring the safety of our staff, faculty, students, and the hundreds of thousands of people who visit our campuses each year.

As a further preface, I would also note that as you know, a recent report prepared by the College of Engineering at the Berkeley campus called the October 17 earthquake, quote, "the most serious disaster in U.S. history," close quote. Over 1,000 buildings in five Bay Area counties were condemned because of structural damage from this earthquake. The University's buildings, with one exception at the Santa Cruz campus, came through the quake without major damage.

I've asked Vice President Baker, Bill Baker, on my right, and Assistant Vice President Bocchicchio, Mike Bocchicchio, known to most of you, having recently served as State Architect, to comment in more detail.

Their comments will fall into four categories.

First, I've asked Vice President Baker to talk about the history of the University's efforts to obtain state funds to help with the correction of seismic deficiencies, noting specifically the seismic corrections to facilities on the Berkeley campus, which were of particular concern to you on the occasion of your last meeting; second, to ask that he address the damage sustained by the University of California as a result of the October 17th earthquake; and, third, our position on current legislation relating to seismic improvements.

I have then asked Mike Bocchicchio to discuss the status of our plan for action for the future. As you heard at your December 14 meeting, I will be recommending to the regents next week at their meeting that the University borrow up to $50 million to perform the work needed to correct our most seismically vulnerable buildings.

The plan we have developed should go a long way toward speeding up corrections of the University's seismic problems. It allocates a reasonable share of the burden among and between interested parties, improves our level of preparation for earthquakes, affords assurance to our students, staff, and faculty that the University is acting responsibly and expeditiously on this problem, and permits us to proceed immediately with these corrections.

Now, considering state funds, non-state funds on the campus, and the funds I plan to set aside, I anticipate spending, for the University of California as a whole, about $30 million a year, on average, for seismic improvements, which should allow us to improve the seismic safety of our buildings, especially those rated "poor" and "very poor."

I hope that our presentation today will relieve some of your concerns, inform your understanding of our circumstances, and provide you with the assurance that you need to have, and should have, that the University is moving responsibly and quickly to do what we can with this very vital issue.

Bill, if you'd pick it up, please.

VICE PRESIDENT BAKER: Thank you, Mr. Chairman and members.

The first seismic correction project which was included in the University of California's budget appeared in 1974-75. That, of course, followed the disastrous San Fernando earthquake in 1971.

Although we requested nearly $20 million in that year, which would be nearly $50 million of today's dollars, the legislature approved only half of that $20 million request, and despite a determined effort on our part, only about $1.5 million was actually released by the state, and that was for two projects at our Santa Barbara campus. Those projects were completed, and, in fact, weathered well the 1978 earthquake in the Santa Barbara area.

After that first request in 1974-75, the University continued to request state funds each year for strengthening facilities which were found to be substandard from the standpoint of resistance to seismic forces. Until the early 1980's, however, virtually no state funds were provided, in spite of our continued, determined effort.

In 1974, the legislature established your commission, and in January of 1975, the Board of Regents of the University adopted a policy calling for acceptable levels of seismic safety in University facilities.

Each year during the late '70's and early '80's, better than a ten-year period, the UC Board of Regents were asked to approve an authorization for the president to amend the budget to include the highest priority projects and to request appropriate state funding, should the state indicate a willingness to provide funds for correction of seismic deficiencies.

In the early years of that period, however, the state advised that it was not prepared to fund such projects, pending completion of a report by the Seismic Safety Commission and evaluation of state-owned buildings. In the later years, the state was, in any event, spending relatively little on capital outlay for our projects or for the state as a whole.

And then, finally, in the early '80's, we received some relatively minor amounts for studies and planning. Well, it was during these years, in the early '80's, that we gave serious consideration to the question of posting signs on buildings thought to be seismically substandard, indicating each building's relative safety. Given the intolerable disruption that we expected that would cause, we decided to focus our efforts instead on what we thought would be a far more effective strategy, and that is, to intensify our effort to secure funds to make the necessary seismic improvements.

It was our assessment that, similar to the point that Commissioner Bolt expressed at your last meeting, posting signs would simply not get to the crux of the matter. Posting signs would not fix buildings, and our energy would be better spent on increasing our efforts to obtain state funding.

Well, this strategy has yielded results. It was in 1985-86 that the state first appropriated funds for a specific project to correct seismic deficiencies. The earlier appropriation in the mid-'70's was a general appropriation, not building-specific. But in '85-86, our first appropriation came through, and that year the state funded seismic improvements for South Hall on the Berkeley campus.

Let me emphasize at this point that my remarks to the Board of Regents this past November, which were made reference to in your last meeting's minutes, were in no way intended to blame the legislature, or anyone else for that matter, for the lack of state funding in the late '70's and early '80's. Nonetheless, it is a fact that in spite of determined efforts, year after year, we were unable to obtain state funding for individual seismic safety projects until the mid-1980's.

In recent years, however, the governor and the legislature have supported the University in beginning to address our broad spectrum of capital needs, including seismic and other life safety improvements. And I noted Mr. Tobin's comment on the governor's remarks, and we welcome that statement as well, Tom, indeed.

Now, since 1985, we've received construction funding for nine building projects where seismic corrections were the primary objective or an important component of the work. Funds have been received for design or working drawings on an additional five projects. The 1990-91 governor's budget, just released yesterday, includes funding for eight projects involving seismic corrections, two each at Berkeley and Los Angeles, one each at San Diego, Irvine, Riverside, and our Santa Cruz campus.

The University's five-year capital improvement plan, 1990 through '94-95, includes a total of 18 projects involving seismic corrections, most of which, appropriately, are on either the Los Angeles or the Berkeley campus, as you might well expect.

Our preliminary estimates, which we've shared with your staff, are that it would cost approximately $260 million to complete just the seismic corrections, just the seismic correction part, on all our state-supported University buildings rated "poor" or "very poor," beyond what is included in our five-year plan.

We also have underway a program of seismic corrections for buildings that house activities not funded by the state. This, of course, includes hospitals — we have five teaching hospitals, as you probably know — student housing, student services, organized athletics, and parking. This program is directed by each campus individually.

Of the 34 non-state-supported major buildings originally rated "poor" or "very poor," work has been completed or is underway on half. The greatest concern is for student residence halls. Work is complete on seismic corrections on two residence halls at Berkeley, one at Los Angeles, one at Riverside, two at San Diego, and two at Santa Cruz. Work is underway on three more at Los Angeles.

A number of commissioners raised questions regarding efforts on the Berkeley campus to make seismic improvements to its facilities. The campus, in fact, has made significant progress. In fact, they really have led the other campuses. They've received funding to correct seismic deficiencies at Wheeler Hall, South Hall, and California Hall, three of the highest priority projects originally identified by the Degenkolb firm.

We recognize, of course, that much additional work is needed. In 1989-90, the state provided in excess of $200,000 to review the "poor" and "very poor" buildings on the Berkeley campus, and then to determine which buildings should be upgraded first. The remaining funds we would allocate to begin the planning and engineering studies.

The governor's budget, 1990-91, proposes $8.7 million in construction funds for the Life Sciences Building, and working drawings for both the Doe and Moffett Libraries. 1991-92, we'll request an additional $33 million in construction funds to improve the seismic safety of the two library buildings. We have already determined, in addition, to immediately allocate funds to upgrade University Hall, which is now or will soon be a Berkeley campus building, the President's Office having moved to facilities in Oakland.

Let me turn now to the October 17 earthquake and the damage we had on three of our campuses and the costs associated with that.

As President Gardner indicated, with only one exception at the Santa Cruz campus, University buildings suffered relatively minor structural damage on October 17. We're still refining estimates of the total damage, but it appears to be in the neighborhood of $25 million for all three campuses where damage was incurred, at San Francisco, Berkeley, and Santa Cruz.

At the Santa Cruz campus, the campus suffered no structural damage, but it did suffer tragic loss of lives in the collapse of the Cypress overpass, when one of the campus commuter vans was crushed, killing five people, four of whom were our employees, and three others critically injured.

This terrible loss of life — of course, tragic, and each individual's personal experience of the earthquake, at home and on campus, has had severe impact on the San Francisco campus. However, there were no injuries among personnel, patients, or visitors on the campus proper. All of the buildings at San Francisco have been inspected. No major structural damage was found, and all were determined to be safe for occupancy.

Laboratories lost much glassware, particularly where there was open shelving and bench work. In general, things fell over, light fixtures were damaged, equipment was damaged, books and files strewn about. No animals were lost at any site, and we have a number of sites at San Francisco where research animals are housed.

There was damage in the library at San Francisco due to shelving pulling away from the walls. And at the Center for Educational Development, a fire sprinkler water line broke, causing severe damage, water damage, in this case.

Our environmental health and safety technologists completed a room-by-room check of substances spilled or exposed, and despite some spills of hazardous substances, nearly all labs were back in full operation by October 19, two days later.

At the Santa Cruz campus, there were no casualties, and a few minor injuries, no building collapses. One serious structural problem at Santa Cruz, the damage to the Natural Sciences Unit 2 Project was serious. Many of the connections between the building's horizontal beams and its vertical members showed the stress, and there was a possibility of building collapse from an aftershock approaching the quake's initial magnitude.

The structure now has been temporarily reinforced with heavy timber, and a permanent solution is under design.

There was at Santa Cruz, as at San Francisco, widespread loss of equipment and other nonstructural, physical damage.

At the Berkeley campus, there were no injuries and no major structural damage, a fair amount of minor damage, including some gas leaks, water leaks, material falling from shelves, and the same kind of glassware problems that the other campuses encountered.

At the Lawrence Berkeley and Lawrence Livermore Labs, there was no structural damage nor injuries reported.

Let me then remark now, if I may, Mr. Chairman, on some current legislation, particularly SB 1250, by Mr. Torres. We are on record as supporting Senator Torres' bill, which, as currently proposed to be amended — careful words there, "proposed to be amended" — would authorize $175 million in general obligation bonds to be used for the reconstruction or the seismic retrofitting of University buildings. And my staff has been working closely with the Commission staff not only to develop needed amendments to SB 1250, but also to provide supporting data.

In making seismic corrections to our buildings, we have encountered some special planning issues which I'd like to share with you. I think these can be best illustrated by the Powell Library at Los Angeles. That's the major, central library at the Los Angeles campus. It's one of the projects in the governor's 1990-91 budget, and that includes a seismic component.

This project illustrates the point I make regarding the difficulty we have with undertaking the seismic work.

The reason that we began a major capital project for the Powell Library was to address seismic deficiencies identified earlier in the Degenkolb studies. Those structural corrections are estimated to cost about $11 million. However, that amount of work throughout the building triggered a legal requirement to bring the building up to other fire code and building code requirements, adding another $17 million to the cost of the project. This is not unreasonable because, of course, the fire safety aspects of the building are as worrisome to us as seismic deficiencies are.

Given the amount of seismic and other code work being done on the building anyway — the building will have to be evacuated — it's obviously cost-effective to do other, needed improvements at the same time to ensure that the building will be fully functional well into the next century. Well, these improvements, plus other factors such as temporary relocation expenses of the library, bring the total cost of the project to $36 million, where only $11 million, less than a third, can be attributed to the seismic problem, but the total cost of the project is $36 million.

There are very few what we might call stand-alone seismic projects. Almost all of them require lots of other work.

Now, we're supporting SB 1250, but I must tell you that a bond limited to seismic correction presents us with some difficulty, because all of our buildings, nearly all, have these other code and programmatic problems associated with them. And these, of course, would not be funded by SB 1250, so we're in a bit of a dilemma there. Nonetheless, we want you to know that we have very strong views on the importance of seismic corrections and will continue to support the current legislation.

I've been personally involved at the University since 1964. It turns out I'm a licensed civil engineer, I'm not unacquainted with these matters, and I have been working for nearly twenty years to get this program resolved. It's not been easy, but we're going to continue to work at it and intensify our efforts.

Let me turn now to our plan of action. We are aggressively pursuing a number of options to improve the seismic safety of our facilities. In November, President Gardner presented the regents with a six-point plan to enable the University to respond effectively to the October 17 earthquake and to the issue of seismic safety in general. Although Commissioner Bolt has outlined a plan at your December 14 meeting, I think it would bear repeating.

First, each chancellor is now reviewing the adequacy of earthquake and disaster plans on his or her campus. As needed, these plans will be strengthened.

Second, we are studying the effect of the October 17 earthquake to learn how to be better prepared for the next one.

Third, we will continue, as I have outlined, to aggressively pursue state funding for seismic safety corrections. Our efforts began in 1974 seeking state funds. Only in 1985-86, more than ten years later, did we receive funding for the first major project, and we have been modestly successful since that time. But nonetheless, the results are not coming along as fast as we'd like to make them happen, and we are determined to accelerate the process.

And that leads to my next point. The University has established what we're calling a strike force to identify and study the seismic conditions of our most vulnerable buildings, and I'll ask Assistant Vice President Bocchicchio to comment on that in more detail.

The fifth of our six-point plan is that we will examine our buildings rated "poor" or "very poor" and prepare an immediate plan for corrective action.

And the sixth point, as President Gardner indicated, we will seek to borrow up to $50 million to perform the work needed to correct deficiencies on our most vulnerable buildings, where the work can be done without major cost renovations, as I indicated earlier. That borrowing of up to $50 million will permit us to address immediately the most severe problems, rather than waiting for a considerably longer period.

I think that these strategies will allow us to move forward in an accelerated fashion. We have done a lot, we have a lot more to do, but I think that we are positioned now to make substantial progress.

I'll turn to Mr. Bocchicchio now.

ASSISTANT VICE PRESIDENT BOCCHICCHIO: Thank you, Bill.

Mr. Chairman and members of the Commission, in the very short period of time since President Gardner presented the regents with his six-point plan, we've made some substantial progress in the implementation of that plan in this strike force effort that we are calling.

I'd like to take a few minutes here to provide you with a status report.

The first element of the strike force program that we have underway deals with the nonstructural elements of buildings. It deals with falling and sliding hazards and the like. Now, historically, we have done a lot in this particular area, but it's not a one-time shot. It's an ongoing process. Every time you have a change to a building or new tenants, there is a need to look at the nonstructural hazards as well.

Accordingly, each campus is preparing and has submitted to the Office of the President a punch list of nonstructural hazard mitigation items that can be accomplished quickly. These lists have been prepared by structural engineering consultants and in-house campus personnel, and they include such items as anchoring of utilities, fixtures, equipment, and other elements to the walls and the structure, to eliminate both interior and exterior falling, sliding, and rupturing hazards.

Vice President Baker has just described some of the damage that we had at some of the campuses, and a lot of the damage was in this particular area. We are responding to that need.

Now, currently, these lists, together with conceptual cost estimates, are being evaluated by my staff, and it's our intention to allocate funds for this work as quickly as possible, so that we can get on with this program.

The second major element of the strike force effort deals with those particular buildings rated "very poor" and selected "poor" buildings that can be seismically retrofitted without major renovation or comprehensive renovation to the buildings.

And accordingly, the first time we met with the campus administrators, it was clear that there was at least one building that was ready to go that we could proceed with, and that was University Hall, on the Berkeley campus. So, funds have already been allocated to proceed with that project. Architects and engineers have been commissioned by the campus, and design work is proceeding. Construction is slated for mid-year.

However, even though in that first meeting of the campus administrators, we very intuitively had decided that there were some "very poor" projects that might go forward under this program, that is, under the criteria of this program, that is, minimal renovation to the building and pure seismic, if you will, there were some "very poor" structures that required further study to determine, in fact, if those projects could meet this very narrow criterion for this program.

And accordingly, the Office of the President allocated architectural and engineering study funds for 12 buildings throughout the system. These studies or conceptual plans for seismic renovation work, together with conceptual cost estimates for candidate buildings, are being submitted to the Office of the President this week, and funding decisions will be made as quickly as possible so that we can proceed with this work.

As Vice President Baker has stated, there are many cases where pure seismic retrofit work is not possible without triggering a substantial amount of additional work required by code or by programmatic need. State funding will be sought for these major projects. And what we're having each campus do — and they're in the process now of preparing a report on each of the "very poor" buildings included in the Degenkolb list, to indicate the current status of those facilities, so that we might develop funding plans and carefully track our progress for these more vulnerable buildings in the system.

So, to summarize the progress we've made in the last month, we have a great deal of information compiled, estimates have been compiled, they're now being submitted this week, they're being analyzed, and we expect to allocate funds as quickly as possible so that the mitigation work can begin.

And I should add that we are proceeding on this program, I really believe, with a sense of urgency. And as President Gardner has stated, this plan will help to expedite the correction of the University seismic deficiencies.

Thank you.

PRESIDENT GARDNER: That would conclude our formal presentation, Chairman. We'd be more than pleased to welcome your comments and questions.

CHAIRMAN CLUFF: Thank you very much. We appreciate that very concise summary of your activities and what your immediate plans are, and I think that latter part does contain a lot of new information that I personally wasn't aware of and that was very helpful to me. And I want to congratulate every one of you for the leadership that you're showing in addressing this very difficult problem.

How can we as a commission work together with you in trying to move in a more aggressive way? I guess I'm personally concerned — I serve on the Working Group on Earthquake Probabilities that's giving a progress report at the NEPC meeting today in Berkeley, and the reassessment of the Bay Area is that the probability of a major earthquake on the Hayward Fault is significantly increased. And the details of that will be discussed, or is being discussed right now at Berkeley. And there are several other places in Southern California where there is a clear indication of the most likely places for very damaging earthquakes to occur.

And I would hope that, in some way, you could — might put that into your overall program, to help make some of the priority choices, because I think the Hayward Fault, in my own personal judgment, is — our earthquake probabilities is based on a 30-year period — my own personal judgment, given the doublet of earthquakes we've had between the San Andreas and the Hayward Fault over the last 150 years, that we may only have a few years, not 30 years. And so, I'm particularly concerned about that.

So, my question is, what can we as a commission do to help you? I guess that's the concern that I have. In moving this legislation forward and so forth, we want to do what we can. So, don't hesitate to, today and other times, let us know how we can work together with you.

VICE PRESIDENT BAKER: I might take a — try at a response, Mr. Chairman. And my answer would be to continue doing exactly what you're doing. We've had a very good relationship with Mr. Tobin, work with him all the time, and I think that cooperative work together would be most helpful.

So, I'd suggest we continue working as we are, in response to your suggestion.

PRESIDENT GARDNER: May I offer just a modest elaboration of that?

I think it's crucial that this commission continue to keep this issue in front of the people of the State of California. Now, this is, after all, your responsibility, to deal with this issue, and you can go at it with a singularness of purpose and a certain singlemindedness that those of us who have a somewhat broader portfolio have a hard time doing.

So, as we attempt to deal with members of the legislature and those in the Department of Finance, or even with our students, whose fees are, from time to time, increased in order to help make structurally safe non-state-funded buildings, it's helpful for us to have our proposals and decisions made against the backdrop of a more generalized expression of concern, which you are in the best single position to keep in focus and up and visible, in terms of the interests of the public.

So, as we go to the legislature with respect to our regular capital budget, as I've already indicated to you, over the next several years, no small portion of it bears upon this very issue. It helps us in those conversations with senators and assemblymen and the Department of Finance if they remain aware of this problem as we attempt to infuse it into our budgets.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. I just have a few questions.

I just wanted to go back to the comment on the 1974-75, on the money that was allocated. When you indicate that the state only released $1.5 million when the legislature and the governor had indicated that it would be $10 million, why was there only $1.5 million released?

VICE PRESIDENT BAKER: I'm glad that — I'm glad you gave me a chance to elaborate on that. I was there at the time.

We reacted quickly, and were really the first state agency to react following the San Fernando earthquake. We didn't have a lot of detailed information, so we went to the legislature with our budget request for $20 million, which was a lot of money at that time, undesignated projects — we didn't have a project — $20 million to address this problem, because we did not have sufficient information on specific projects then.

And that — of the $20 million request, $10 million was included in the Budget Act, so we had $10 million funded. We immediately addressed the first two projects that we had the best information on, and two small projects at Santa Barbara. And then, mid-year, mid-'74-75 budget year, the leg analyst recommended that, "Well, this wasn't just a University of California problem; it was really a statewide problem" — I don't need to remind this body of that — "and why should the University be the only one getting money, and how do we know that the University's buildings are the ones that ought to be corrected first?"

"So, therefore," said they, "the legislature ought to put a hold on the remaining funds until we, the legislature, the leg analyst, understand what the statewide problem is, so we know where the priorities ought to be, so we know where best to put the money." And so, the rest of our $10-million appropriation was sequestered, and we never got it.

Meanwhile, another year went by, and your commission was established, and another three years went by before we finally developed or really you finally developed the statewide list. And by this time — and every year, we went after money, but never got it — always waiting till that list was developed, always waiting for the problem to develop or to be — the problem to be resolved as a statewide issue rather than a UC issue. So, that's what happened.

COMMISSIONER PESTOR: So, it was the legislative analyst that was really questioning the allocation of the remainder of those funds?

VICE PRESIDENT BAKER: Yes.

COMMISSIONER PESTOR: Okay. And then I've just got some more questions here too, so if you want to get back to the Commission, that's fine.

On the $50 million this year for retrofit, how many buildings is that all together?

ASSISTANT VICE PRESIDENT BOCCHICCHIO: At this moment, we do not know what the universe looks like out there. The campuses are now submitting various buildings that they feel are their highest priorities in the "very poor" category and some selected "poor" buildings. So, we don't know yet how far that $50 million is going to go, until we get through all the material and make some preliminary allocations.

PRESIDENT GARDNER: When are their reports due in?

ASSISTANT VICE PRESIDENT BOCCHICCHIO: Their reports — the reports are coming in this week, and we're just beginning to compile the data.

COMMISSIONER PESTOR: Okay. And what percent is that of the total capital budget for the University?

PRESIDENT GARDNER: Well, Bill, you're budget officer.

VICE PRESIDENT BAKER: Our state-funded capital budget, for the current year and next year, the current year just under $200 million, and the next year, the governor's budget has about $225 million. That's the state-funded budget.

We have, in other budgets, gift-funded projects, for example, projects — student housing projects, parking projects, a whole host of non-state-funded hospital projects, a whole host of non-state-funded projects, probably about that amount.

So, our total budget is perhaps in the neighborhood of $500 million.

COMMISSIONER PESTOR: Okay. And then, the President indicated that in future years it would be $30 million a year. With that, how many years do you think it would take to retrofit all your buildings?

PRESIDENT GARDNER: I'll ask Bill to respond to that, but I want to make it clear that the $50 million we're borrowing will not all be spent in the current fiscal year, or even next fiscal year. We'll spend it as fast as we can get it out.

COMMISSIONER PESTOR: Right.

PRESIDENT GARDNER: But that's not all we're spending on seismic. We're spending quite a bit of money on non-state-funded buildings for seismic, and we have, in the '90-91 budget request, additional funds for seismic, as we are also spending in the current capital budget, funds for seismic. So, I don't want you to assume, as one might from your question, that all we're spending is the $50 million. I want to make that clear.

COMMISSIONER PESTOR: Okay.

PRESIDENT GARDNER: So, Bill will respond to the rest of that question.

VICE PRESIDENT BAKER: Let me add to that. The $30 million which the President indicated would be what we'd expect the state-funded portion to be, on a timeline, one has to be realistic. Not only is it unrealistic to assume that we're going to do all this in a short time, because the funding isn't going to be available, but also, logistically, we can't do it all at once. You can only do a few buildings at a time, because you've got to have someplace to put the people while you're doing the work, because in almost all cases, the buildings have to be evacuated to do the work.

I think it's not unreasonable to expect that within a ten-year period, we'll be where we ought to be. That's not unreasonable, and I think it's not unrealistic.

COMMISSIONER PESTOR: Okay.

And, Mr. Chairman, I just have a couple more quick questions here too.

The bond — Senate Bill 1250, assuming that passes and the voters were to approve that, would you still commit to going after $30 million a year in addition to that bond, or if the bond issue passes, are you going to not continue to go for $30 million on top of that?

VICE PRESIDENT BAKER: I can't answer that, and let me tell you why. I don't know how our portion of that bond issue will be allocated and for which projects. Recall that I indicated that one of the problems we had was that we've got all kinds of other problems that come up when you tear a building apart and strengthen it for increased seismic resistance.

So, absent understanding how bond proceeds might be allocated, it's difficult to say. It may be, for example, that if the bond proceeds, the seismic bond, were limited solely to seismic corrections, then surely we'd have to have the $30 million or so in our budget to take care of the other work. So, it's sort of hard to answer that question, absent more information.

PRESIDENT GARDNER: I'd like to answer it in a more general way, rather than a more specific way.

It would surely accelerate our efforts. That it would do, because we'd try and arrange the funding packages in order to take advantage of those funds to accelerate that effort.

COMMISSIONER PESTOR: Okay. Now, on the total value of the — do you have any idea about the total value of the buildings that are rated "poor" or "very poor"? Assuming there was a major earthquake throughout the state and all these buildings fell down, do you have any idea of what the total replacement value of all those buildings would be?

PRESIDENT GARDNER: No, I haven't got that information.

COMMISSIONER PESTOR: Okay.

PRESIDENT GARDNER: Or on the contents.

COMMISSIONER PESTOR: Or the contents, okay.

You mentioned that you were seeking some additional state funds, and I notice FEMA is on our agenda for later today, and I'll ask them this question too. Are you going to be seeking some federal matching funds for the money to be used —

PRESIDENT GARDNER: Yes, already underway.

COMMISSIONER PESTOR: Okay.

PRESIDENT GARDNER: We have filed.

COMMISSIONER PESTOR: Okay. And I think that, just —

VICE PRESIDENT BAKER: In fact, they're arguing with us like they are with everybody else, about our cost estimates, you should know.

COMMISSIONER PESTOR: Yeah.

VICE PRESIDENT BAKER: But we're working our way through them.

COMMISSIONER PESTOR: Okay. And one point, too, I just wanted to make too, because I obviously get a little bit excited about this issue, but the Commission, as you heard earlier, is keeping up on how local governments are complying with SB 547. And I think that, you know, if we're going hold private building owners to a high standard, and there's a lot of people in this state that are really going out on a limb trying to reinforce their buildings — that — personally, I think that, you know, the state's public buildings, not just UC, but CSU and other state buildings as well, that — I think that we as a commission should hold them to a high standard too, because if the public is going to that expense, certainly the state, you know —

PRESIDENT GARDNER: Yes.

COMMISSIONER PESTOR: — should —

PRESIDENT GARDNER: I recall 547 is the hospital —

COMMISSIONER PESTOR: No, SB 547 is the one that requires local governments to develop — to identify the unsafe buildings.

PRESIDENT GARDNER: There was another measure some years back that dealt with hospitals. We're in compliance with that.

COMMISSIONER PESTOR: Right.

PRESIDENT GARDNER: And we've put a lot of money into our hospital projects, and we are in full compliance —

COMMISSIONER PESTOR: Right.

PRESIDENT GARDNER: — with the retrofit.

COMMISSIONER PESTOR: And at the last meeting, the issue came up, of course, about signs. And I know that was very controversial. And I agree with you that signs don't fix buildings, but I think that, again, as I mentioned last month, that in the interim, I think it is helpful for students to know whether they are entering a building that is potentially hazardous, and that — perhaps even including instructions as to what they should do in the event of an earthquake, whether or not they should leave the building, get under a table, go to a certain part of the structure, just as there are instructions for fires.

Assemblyman Hayden will be amending a bill today, this afternoon, that would require signs, and I wanted to just ask you again — I know there were some comments on the signs, and, again, I understand that signs don't fix buildings, and that the priority should be fixing buildings — but what is your feeling about putting signs not only on UC buildings, but all state buildings as well?

PRESIDENT GARDNER: One of you has a daughter at Berkeley, if I remember reading the minutes correctly? I do too, so I'm concerned as well.

Moreover, we spend more time on these campuses than you do, and our colleagues work there. I worked in University Hall for over a decade. Bill Baker has worked there for 25 years. So, we're not insensitive to this.

The concern I have about posting buildings, in the sense that the issue was discussed by you last time, is the following.

Now, what is a student to do? Now, less than 10 percent of our space is classroom space. They're not elementary schools and they're not junior high schools and they're not high schools, which are almost all classroom space. Less than 10 percent of our space is classroom space. The rest of it is laboratories, clinical space, computer facilities, libraries, and so forth.

Now, let's take Berkeley, or UCLA. The main library there is the Doe Library at Berkeley and the Powell Library at UCLA. They're both in need of seismic strengthening, and we've indicated to you how we're proceeding to deal with that.

What is a student supposed to do? They really don't have the discretion to go in or not to go in. Or if they have an assignment in the computer lab, that's where the assignment is. Or if they're to visit or participate in clinical activities and protocols of one kind or another, that's where it occurs.

So, my concern has been that we not artificially deal with this issue, or deal with it in such a fashion that we create more problems than we solve, which, in my view, posting would do.

Now, I think the suggestion that there be information available to help people react in the event of an earthquake, such as to where the exits are and where it's safer to stand, as against some other place, which we do for fire safety now, is something we really should look at. And if we're short in communicating as effectively we should, well, we ought to look at that and do what we can.

But to post buildings, within the context of your discussion last time, seems to me to be both ill-advised and unwise, and fundamentally unhelpful. That's my own view.

Moreover, if I understood your discussion last time, the University of California was being singled out for the object of this exercise. And that seems to me to be odd. After all, our buildings didn't collapse; the freeway collapsed in this last earthquake, and so did the bridge.

So, if you're going to be suggesting to the University of California that we post our buildings, it seems to me — and only the University of California — it seems to me that that singles out an institution which I think is doing as much as anyone in the state, as though somehow we're doing less than anyone in the state. And it conveys an impression of a kind that's both inaccurate and unfair.

Now, if it's the policy of the State of California to post every freeway and every bridge and every state-owned facility and every school and every university, and indeed, the private sector as well, because the bricks, when they fall, don't distinguish as to whether they're publicly or privately owned, now, that's another matter. But I do have some concern about our being singled out, because it conveys an impression of a special concern and discomfort with our situation, which seems to me to be not consistent with the facts.

CHAIRMAN CLUFF: Commissioner Iwan?

COMMISSIONER IWAN: Well, first, I just would like to say thank you again for being here. I think that you've conveyed to us a different level of concern and action to this problem than we've been getting in previous meetings, and we appreciate your taking the time to do that.

I don't think I caught this, and maybe you gave it in your presentation — if you could just maybe follow up — with the present plans that you have that you've now put in place, how long is it going to take you to make the buildings that are presently rated "poor" and "very poor" at the University campus safe, in other words, to bring those up to an acceptable standard of seismic safety, given the plans that you have now? What are we talking about?

I thought I heard you say that it would take you ten years to spend the $50 million. Now, maybe I misunderstood.

PRESIDENT GARDNER: No, no, no.

COMMISSIONER IWAN: How long, in your present plan, do you plan to have this problem completed?

VICE PRESIDENT BAKER: I'm glad you asked the question, because it sure is not our intent to take ten years to spend the $50 million.

The total cost of modifying the "poor" and "very poor" buildings for seismic alone, just the seismic component, is probably in the neighborhood of $300 million. We've got — maybe even in excess of that, because we figure it's $260 million beyond our first five years. For the total cost, it's probably two to three times that, because we have all the other fire code and other code work. And once you've got a building torn up, it doesn't make sense to put walls back in where they were in the wrong place in the first place. So, it's a much more expensive problem.

What we intend to do, however, with the $50 million to be spent over the next year or two, to address those buildings which we can do immediately, and then continue to press for state funding and other funding to get the rest of them. In a five-year period, I think we'll be substantially along the way. But because some projects are so big and so complicated, it just isn't realistic to think we're going to get all of them in a five-year period, but most of them we will.

PRESIDENT GARDNER: I'd like also to respond with respect to the non-state-funded buildings, because we have a lot of them.

The instructions we've given to the chancellors is to — and we've made a lot of headway there, I might add — that for those buildings that are left, my instructions are that they're to be fixed, that user fees are to be increased in order to provide the funding for it, or if reserve funds are available, to tap into them. And the only impediment to completing that work is not money, because we'll adjust the user fees and student fees accordingly, but it's how quickly we can decant a building and fix it, decant another one and fix it. We hope to do that as quickly as is physically possible.

Now, with respect to the $50 million, I'd rather not borrow $50 million because you have to pay interest on it, but I think that's a premium we simply have to pay. The $50 million will be paid back not from state funds, but from earmarking a portion of the fee we earn for managing three national laboratories for the United States Department of Energy, which funds have previously been used for minor capital projects on our various campuses not funded by the state. That's about $4 million to $5 million a year, and rather than just spend $4 million to $5 million a year for ten to fifteen years in order to get at this, we're going to borrow the money so we can do it within the next one to two to three years, and then pay it back.

VICE PRESIDENT BAKER: I might add that on the non-state projects, we have half of our non-state projects rated "poor" or "very poor" completed or underway, and plans for the rest of them are underway. So, my hope would be most of them would be done within a three-year period, probably all of them in a four- or five-year period.

So, we're moving more quickly there because we have more control over the funding.

COMMISSIONER IWAN: So, you do, then, have a plan, and the plan has a date out there of — what was the date, now? How many years?

VICE PRESIDENT BAKER: I'm guessing. I'm not really certain, but knowing what I know about it, the non-state projects should be finished within a three- to five-year period.

COMMISSIONER IWAN: And then the state projects?

VICE PRESIDENT BAKER: The state projects will probably take as much as ten years. And I'm simply being realistic. I've been fighting this problem for twenty years, and I'm not going to sit here and say that we're going to do it in a couple of years when I know it's not realistic to assume the funding of the magnitude needed will come forward.

So, we are making it a high priority. We'll have much of the work done in — much of the work already done, and a substantial portion done within a five-year period, and all of it within a ten-year period.

COMMISSIONER IWAN: If I could follow up, in this ten-year period, I have a couple of questions. First of all, you've addressed the question of posting, and I'd like to discuss that further but I won't. Do you feel that there are any other interim steps that it would be reasonable for you to take? I mean, ten years is a fairly long period of time. We're talking about a high likelihood of the occurrence of an earthquake. Are there any interim steps that you would consider as more viable to take, other than posting, for example?

And then, my other question is, I think some of us are concerned that there may, in fact, be buildings which are not presently on the so-called "poor" and "very poor" list, which, because of more recent information about the behavior and performance of buildings, maybe need to be put on a list of some hazard. And what's being done to upgrade that list of buildings?

VICE PRESIDENT BAKER: That's a list of questions. Let me see if I can get them all.

COMMISSIONER IWAN: If you get them all in before somebody else —

VICE PRESIDENT BAKER: First, on the time period, should SB 1250 get on the ballot and pass, then we'll accelerate that by quite a lot. And so — and I would assume that SB 1250 is only the first of several bond issues, because the problem is a lot bigger than that one.

So, should funding come forward through general obligation bonds to correct these problems, we'll pick the pace up by quite a lot.

Then, on your question, "What else can we do in the interim?," a number of things we're doing, for example, each campus is undertaking to develop a preparedness plan, in many cases to review existing preparedness plans and to improve upon them. A component of that will be education. And indeed, the suggestion that Mr. Pestor made about the —if the people know what to do when an earthquake happens. The answer is, I don't think the state as a whole has done a very good job on that, and we haven't either. We're going to improve that. Simply by asking people, "What did you do when the earthquake came?," you find that a lot of people who ought to know didn't respond as they should have responded. So, we're going to be working on that.

As to the question on buildings which may not have been on the initial "poor" or "very poor" list but perhaps should be, we're also addressing that. We're reviewing all of our buildings to determine and make certain that we've got buildings rated properly. And we know a lot more about earthquake response now than we did years ago when that was first developed. So, we're also addressing that.

PRESIDENT GARDNER: May I just say that one aspect of it that I'm going to be asking about — Mike will have to give me the answers on it, or Bill — you can spend a lot of money correcting the problem up to 100 percent. But in — you can correct 100 percent of the problem and spend a lot of money doing it. So, if you have five buildings and you have so much money, you could spend all of it correcting two of those five buildings up to 100 percent correction, and you don't do anything with the other three. Or you could bring them up to 80 percent and maybe do all five.

So, I mean, that's a question I'm going to ask, in terms of how we can make most optimal use of what resources we have.

VICE PRESIDENT BAKER: Let me give an analogy that everybody can understand. And earthquake resistance is a complicated — and complicated structures such as our facilities are difficult to assess. And the question is, "What do you do to fix them?" And it's not an easy — easy answer.

On a simple problem like the house you live in, a single-family residence, if it was built before 1930, you can bet that the building itself is not fastened to the foundation. I mean, it's just sitting there.

It's not fastened. In an earthquake, what will happen is, the foundation will slip right out from under your house.

Well, if I looked at your house and said it would cost, to do all the things we ought to do, bracing large windows, tying things down and so forth, I might say, "Well, you're going to have to get $10,000 to fix this up, and, gee, you haven't got it." But I'd say, "If you only have $500 to spend, tie it down with anchor bolts." That's all it costs. And then you'd solve maybe, you know, two-thirds of your problem's been solved by a small investment.

Well, we're trying to find out what that small investment might be on large, complicated structures, so as to get two-thirds of the job done, or some percentage done, at a very low cost. And we're working on that, just as the President said, rather than trying to — 100 percent, fix 100 percent of a building.

To fix five buildings at 100 percent, you might be able to fix twenty of them two-thirds, or something like that.

CHAIRMAN CLUFF: I'm glad to see that kind of thinking going on, because we often see people just standing back and not doing anything, when some simple fixes can make a huge difference.

Commissioner Bolt, I think, had some questions.

COMMISSIONER BOLT: Well, thank you, Mr. Chairman.

Earlier in the Commission meeting, there was some discussion of conflict of interest. You should be aware there's a conflict of roles. I could never address the president of the University as a professor at Berkeley, but I'm wearing the hat today of a commissioner of the Seismic Safety Commission, so I want to — I think I'm all right.

I want to say how pleased I was personally to see the President take the action that he did in saying, "I will take a loan to move this thing forward." I'd not heard that before in over 27 years at the University.

And I think that this is really starting to stimulate things. The University is fortunate in having as one of its senior vice presidents an engineer — Bill Baker mentioned that — but I think now, in the appointment of Mike Bocchicchio, we're very fortunate because, as someone who is dedicated to improving seismic safety, the University has an officer now who I think will really give a great deal of attention to this problem. At least we're looking forward to that.

And I should point out to the Commission that in trying to assess a year when these things will go away, the problem of the list that the Commission is responsible for comes to the fore. And this has already been mentioned by Vice President Baker, and this is somewhere where the Commission, I think, can perhaps again help the University, because that list is turned to by many people for many things, without reading the fine print. It was meant only to be a first cut at some sort of prioritization statewide, but people are using it to conclude many important problems beyond what the list was meant to be.

Already at Berkeley, we're starting to see if the formula used should not be changed in some way so that some other number might be better when you get to the stage of actually trying to do something and spend money.

And so, I make those remarks for my fellow commissioners as well as for the President and his officers. I think there's a lot to do there, and maybe we could help you —

VICE PRESIDENT BAKER: My only sentiment, Commissioner Bolt, is that it could be a $3 billion to $5 billion statewide problem. And it is a big problem; it is not small.

I can recall, some years back, trying to make some estimate, and it was in the $3 billion range. Even if I'm off by a billion, it's pretty big. My guess is, in today's dollars, it's a $3 billion to $5 billion problem statewide.

CHAIRMAN CLUFF: Yes, Commissioner Waste.

COMMISSIONER WASTE: President Gardner alluded, I think properly so, to whether or not the University was being singled out. And I think in a sense they were, and I'd like to address that one specifically.

And I do this as a potential friend. My family are fourth-generation graduates from Berkeley, and you have potential friends on the Commission.

But a University representative came and said, in effect, that program needs were going to go ahead of public safety, and that the — if the Commission would help get money, then the seismic work would try and find a place in the program. And hearing things like this, we became concerned, obviously.

However, your willingness to come here and discuss the matter frankly, and to use words, aggressive words, like "high priority," I think can go a long ways towards solving any problems that we might have in that area. I think, as Chairman Cluff is pointing out, this should be a cooperative effort. Our concern, although we come from many disciplines also — and I sit on the board of a small, private college, so I understand what you're talking about, only in smaller numbers — but it should be a cooperative effort. We want to cooperate with you, and we are concerned.

A number of us sat and listened as the building shaked and rattled not long ago that we were in ourselves. And our ultimate concern is to try and save as many people as we can when it does happen.

And I'm going to be interested to hear Lloyd's comments later — apparently it's coming sooner than we thought, Lloyd?

But I think it's a spirit of cooperation that we want to bring about.

PRESIDENT GARDNER: I surely welcome that, and I did read the relevant portions of your last meeting's minutes and regret that there was conveyed to you what appeared to you at least to be a representation by the University of California of a particular viewpoint.

One reason I was especially welcoming of the opportunity to be here today was to state the University of California's position on these issues. Various people will have their own views of it, but what we shared with you today is the position of the University of California on this matter.

We have a common concern here. As you point out, Commissioner Waste, this is a common responsibility and a common purpose that gathers us here today. We all have the same objective. And we simply need to continue, as I believe we have, with Mr. Tobin and Vice President Baker, maintaining those lines of communication, benefitting from one another's experience, and reinforcing one another's efforts to try and obtain the resources needed to move forward.

CHAIRMAN CLUFF: I think Commissioner Peak had a question.

COMMISSIONER PEAK: Commissioner Pestor alluded earlier to a bill which will be amended in total in the Assembly this afternoon or today by Assemblyman Hayden. It's Assembly Bill Number 1826, which has great bearing on the matters that we're talking about. I wanted to ask if you gentlemen were aware of this bill and the provisions of this bill and if you'd like to comment on it.

We are going to be acting on that, incidentally, later today.

VICE PRESIDENT BAKER: Yes, Mr. Peak, I saw it this morning, read the bill briefly before I came over here, and suggested to my staff to work with Mr. Hayden's staff to suggest some corrections, because, first, there's a number of technical errors in the bill, and I know Mr. Tobin's aware of that, a number of problems with that, but those can be fixed.

We can be, I believe, in compliance with the bill's proposed timeline that buildings be rendered into a reasonably safe condition by the year 2000. That's consistent with my timelines, as I see it, funding coming along, of course, as being a necessary condition.

As to the — two other points. One is that, as President Gardner has suggested, the bill singles out only a portion of state government. My own view is that if we're going to post buildings, let's post buildings, rather than singling out just one, relatively small segment of state government.

A final point is that the issue of posting, as President Gardner has indicated, is of great concern to us. We feel that it would likely cause more problems than it produces solutions.

In any event, we'll be conveying those points of view to Mr. Hayden's staff, and we'll work with Mr. Tobin as the bill moves along.

COMMISSIONER PEAK: Well, that does include all of the higher education facilities, public facilities, in the State of California —

VICE PRESIDENT BAKER: That's correct.

COMMISSIONER PEAK: — not just the University system.

VICE PRESIDENT BAKER: That is correct. But, still, that's only a fraction of total state government.

COMMISSIONER PEAK: Right.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Yes. Just in terms of Senator Alquist's position, he certainly appreciates your presence here and —

CHAIRMAN CLUFF: Can you speak into your microphone, Keith?

COMMISSIONER UMEMOTO: Senator Alquist certainly appreciates your presence here and your emphasis toward retrofitting the University of California systemwide buildings.

And, of course, as you know, Senator Alquist has been very instrumental in pursuing seismic safety in California, not only for the University of California, but all state buildings and all structures in California itself. And he definitely appreciates your presence, again.

In clarifying, you had mentioned that it seemed like the Commission may have been focusing just on the University of California in some of its statements. As in the case with the situation at hand, being a University of California representative at that — I presume, at that — was it the November or the December meeting that we were discussing —

CHAIRMAN CLUFF: December.

COMMISSIONER UMEMOTO: The December, okay.

Well, just a point of clarification. There is a piece of legislation, SB 5x, in special session, that deals not just with the University of California, but on posting of high-occupancy buildings.

So, it may appear that that may, per se, be an issue focusing — with the Hayden bill coming up today — that it's only addressing the University of California. But the legislature itself has looked at — I mean, not just singling out the University of California as a whole.

Also, for my purposes and in point of clarification as trying to avoid any misunderstandings, there's reference — you've made references toward that it'll cost two to three times as much money to retrofit and take care of all the other necessary building code requirements, safety code requirements. I wanted to just clarify, the $30 million that you're planning to spend for the next — each year annually for the next ten years, that would consequently mean, in terms of just the strict seismic retrofitting portion, probably in the neighborhood of $10 million to $12 million? Is that correct or —

PRESIDENT GARDNER: The 30 would be the seismic portion.

COMMISSIONER UMEMOTO: Oh, that's — that is the seismic portion, okay.

PRESIDENT GARDNER: Yes, correct.

COMMISSIONER UMEMOTO: Okay. And in terms of just the posting issue, again, I wanted to kind of get one clarification on that. Currently the University of California system's position is that you would prefer not to have posting? Is that correct?

VICE PRESIDENT BAKER: That's correct.

COMMISSIONER UMEMOTO: Okay. Now, has the issue been raised? Is that being — posting being used per se as a vehicle also to encourage students, faculty, staff, as a way to let them know that they can pursue other means to assist the University of California also in their lobbying efforts?

PRESIDENT GARDNER: Well, there are other ways of encouraging the faculty, staff, and student body at the University of California to help us than by posting buildings. We don't have to post buildings to encourage their cooperation.

COMMISSIONER UMEMOTO: So, there is — are there any considerations of using your internal networks to —

PRESIDENT GARDNER: Yes.

COMMISSIONER UMEMOTO: Okay.

PRESIDENT GARDNER: One point, if I may, Chairman.

Reference has been made two or three times to a University of California representative. You will, from time to time, call people before you who are from the University of California but do not necessarily represent the University of California when it comes to stating policy positions.

VICE PRESIDENT BAKER: And I might say, for the future, Mr. Tobin and I have reached an agreement where he'll be contacting me when you need to have someone, and I'll make sure that you have the correct person, a knowledgeable person, one who can speak to the issue at hand. Tom and I have talked about this. That's in place.

CHAIRMAN CLUFF: Bill?

COMMISSIONER KOCKELMAN: On two occasions, we invited the chancellors and —

CHAIRMAN CLUFF: Bill, can you speak into the microphone?

COMMISSIONER KOCKELMAN: Yeah. On two occasions, this Commission invited the President and the chancellors to, you know, share their concerns with us, and on two occasions the University sent Gene Cross. And now I find that he doesn't represent the University, and I've been told he's not a vice chancellor, and that may well be true. But I'm not so sure that that's — that he's an isolated case in your system.

And I realize you don't have control over this huge system; nobody could have control.

But let me share three things with you quite quickly.

I sent a very well documented letter to one of the chancellors as a personal citizen, not as a member of the Commission. The bottom line was it probably wasn't his fault they weren't strengthened, but could he do something in the meantime like sign them? It was cheap, expeditious, he had it within his power to do. He didn't answer the letter. It's now, you know, almost two months. And he had a vice chancellor answer it, and it wasn't responsive.

The bottom line of this vice chancellor was that we were very fortunate that no persons on our campus were injured.

Well, I also sent a copy to all the members of the Board of Regents, which is quite a long group of people. And two of them responded. They didn't have to, but they were nice enough to respond. And one, I think, is a new commissioner, and he very nicely said, "I'm sure the University is taking all the precautions" that I suggested, namely, signing the buildings. Well, obviously, you know, that's not true. You don't even want to sign the buildings.

The third letter was from a lovely man who's chairman of the Academic Senate for all the University system — lovely man, lovely letter. His bottom line is, "The Berkeley students tend to feel that the payoff in their educational experience is worth the risk of an earthquake."

Now, what you said, you know, today is very laudatory. There's no way I could assess your commitment over a long period of time, or even whether, the next 27 years, you'll still be here. So, I'm just still really not comfortable, personally.

PRESIDENT GARDNER: Well, it's hard to answer that observation. You know, when our kids applied for admission to Berkeley and to Davis and to UCLA, as they have over the years, I learned a lot about our admissions procedures as a parent, so —

We have 145,000 employees, we have 165,000 students, we have nine campuses across the University of California, we have agricultural field stations, research stations, and extension offices in every county of the State of California, we operate five major hospitals throughout the state, we operate in 80 foreign countries, we have ships on every major ocean.

COMMISSIONER KOCKELMAN: Awesome.

PRESIDENT GARDNER: It's a — it's a major enterprise.

Now, also, it's an institution that tends not to be suppressing of people's views. Now, Professor Bolt could say anything he wants here today, and there's nothing I could do about it.

VICE PRESIDENT BAKER: And probably will.

PRESIDENT GARDNER: Probably will. (Laughter)

PRESIDENT GARDNER: So, people in the University of California are quite used to expressing their opinions, and usually without regard to whether or not it's in conflict with our policies.

So, you will find people have very different views about what's an appropriate response, for example, to the seismic problem. I mean, I found, for example, that some people reacted rather dramatically psychologically to the earthquake. I mean, it took days and even weeks for them really to get back in the swing of it — in my own office, a real problem.

I have a vice president, not sitting here — I have a vice president, at the other end of the spectrum, who was on a telephone call to our office here in Sacramento, who completed his telephone call. And we were swaying back and forth in the Kaiser Center on the 22nd Floor. Halfway through the telephone conversation, he asked his secretary for a file, right in the middle of the quake. Well, she was under her desk — properly.

So, you have people reacting very differently. Now, I mention that only because you can invite the opinions of any number of people and get almost as many answers. Those who are before you today are the ones who, in fact, have responsibility for recommending policy decisions to the regents. We have the responsibility for implementing them. I hold the chancellors responsible for this. I allocate the money, so what I have undertaken to represent to you today is what we are going to do.

I don't know what the average student's view is on this. That may be the interpretation given it by the chairman of the senate. Whether he's right or wrong, I don't have any idea. We haven't taken a survey of it. My guess is, some students worry about it and other students don't, just like the average population.

So, all I'm saying is that I'm sure you appreciate the complexity of trying to respond to a complex area, and I just want to try and answer that.

COMMISSIONER KOCKELMAN: Mr. Chairman, let me ask — let me switch to something more specific and for somebody — for a statement that was made here today.

We've heard Mr. Baker several times, and I always appreciate his candidness. He stated that putting up warning signs would cause an intolerable disruption. And I can't imagine that that would be any greater than vacating a building to strengthen it. So, I think we're talking about something much less than vacating a building to strengthen it.

The country is signed for drugs, for traffic, for cigarettes, for alcohol. The campus has warning signs for rape and suicide, et cetera, et cetera. I think the danger is what disrupts people, not posting a warning sign. So, that's my feeling.

And I wonder if you could elaborate on any studies or evidence you have for a warning sign really just having an intolerable disruption on campus.

VICE PRESIDENT BAKER: No, sir. My view is my view, just as yours is your view, so we can probably spend a lot of time debating it. That's my personal viewpoint, my own. It's somewhat informed, because I do have a technical background, but I don't have a social sciences background, and this really goes to a social science —

COMMISSIONER KOCKELMAN: You are always candid. Thank you.

CHAIRMAN CLUFF: We need to move along.

Pat?

COMMISSIONER SNYDER: A very brief comment, perhaps in summarizing.

As I hear dollars mentioned and years mentioned, it would be helpful for me if the Commission were to be able to receive a copy of your — perhaps your short-range plans —

VICE PRESIDENT BAKER: Sure.

COMMISSIONER SNYDER: — and long-range plans, for the next two years, next ten years, with dollars and with projects allocated. That would be very helpful.

Thank you.

VICE PRESIDENT BAKER: We'd be happy to.

PRESIDENT GARDNER: We'd be very happy to send that.

CHAIRMAN CLUFF: Keith, one last question.

COMMISSIONER UMEMOTO: Yes. There was a comment on kind of the history that Vice President Baker had made, and that was good for clarification purposes. I just wanted to make sure, since we do have some people that may write up on the Seismic Safety Commission meeting, some clarification also.

When was the last time that the legislature deleted budgetary requests for seismic retrofitting? And when was the last time — so, this is a twofold question — the last time the legislature reduced a budgetary request for specific seismic retrofitting projects?

VICE PRESIDENT BAKER: Well, the legislature — the legislature really never has done that.

COMMISSIONER UMEMOTO: Okay.

VICE PRESIDENT BAKER: It was the State Department — it was the Public Works Board that really, in terms of —in 1974-75, the Public Works Board, under instructions by the Department of Finance, and maybe the legislature Joint Budget Committee — and we're not sure — but it was the Public Works Board that wouldn't release the money.

Now, the legislature didn't take an actual legislative action. It took an administrative action not to release the money.

Subsequent to that, we couldn't get any money in the governor's budget because of the history and the policies that were taken in terms of the Seismic Safety Commission and so forth. So, under then-Governor Brown, who originally acted to establish the Commission, we were unsuccessful, even though we tried very hard, year after year, unsuccessfully to get anything in the governor's budgets. The legislature didn't have anything to respond to.

Now, we also attempted to get some projects added by augmentation, but weren't successful. So, the technical answer to your question is the legislature has not, in fact, deleted money from our budget for seismic thresholding.

CHAIRMAN CLUFF: We need to move ahead, but Commissioner Iwan had one, last point.

COMMISSIONER IWAN: I had one quick question for clarification.

Where does the responsibility lie for identifying hazardous structures, budgeting for the retrofit of those, and taking interim actions? Does it lie with the individual campuses, or is that something that is the responsibility of systemwide?

PRESIDENT GARDNER: It is the responsibility of each chancellor to identify the capital needs of his or her campus, which includes the seismic requirements. My office receives the recommendations of the chancellors with respect to these array of needs. I then have the job of fitting those needs into a package that stands some reasonable chance of being favorably considered by the governor and the legislature. We do not reorder the campus priorities.

COMMISSIONER IWAN: Thank you.

CHAIRMAN CLUFF: Tom, you had something?

EXECUTIVE DIRECTOR TOBIN: Yes, Mr. Chairman. Thank you very much. I had a similar question to Commissioner Iwan's, but I have another question, again about the matter of posting.

And you've raised the concern about the disruption that would be caused, and I know, in other conversations I've had with others, there are issues regarding the liability of posting or not posting, there are issues about whether or not it can be an effective education tool or that would help foster meaningful education, in terms of responding during an earthquake in a way that could help people cope with what hazards exist.

And my question is whether or not the University could think this issue through for us in more detail and come back to the Commission with some — a more — I'm not saying that your responses weren't thoughtful, but a more detailed or thoughtful analysis in terms of what some of the issues are that are raised by posting as it affects public buildings, and some of the pros and cons.

I'm familiar with, you know, the wonderful work of the California Policy Seminar, for example. I know there are other organizations or groups within the University that could tackle an issue like this in a multi-disciplinary way and be, you know, independent of the administration and that sort of thing, but could provide some very good advice, not just for the Commission and the University, but maybe the state as a whole, as a whole.

PRESIDENT GARDNER: We've been having this conversation using the term "posting" as though all of us understand that term exactly the same way. We may not, in fact, be meaning the same thing, when you say "posting" and I hear it, in terms of what I'm thinking. Mr. Pestor uses the term, he may have something else in mind. So, we've been using the term as though we all agree on what we mean by that, while, we, in fact, may not be depending upon that assumption to sustain our ongoing discussion.

I think it would be very helpful if the concerns of your Commission were expressed in a more elaborated fashion, such that what it is you have in mind, we correctly comprehend.

What I had in mind when you mentioned this was the vision of the following: Put a big sign on the Doe Library at Berkeley, "This building is seismically unsafe. Enter at your own peril." Okay. So, you're a freshman student coming up to the library. What are you supposed to do about it? Some students say, "Oh, that's fine," and they walk right in. Other students say, "Well, I'm not going in there." So, that's what came up in my mind as I heard this suggestion. That seems to me not to be very helpful, for what should be self-evident reasons. What is the student supposed to do about it?

If you have in mind, on the other hand, discovering ways and means of communicating to the people who use these facilities how to behave if there's an earthquake, or how to seek safety if they're threatened under these conditions, we ought to explore what we can do about that.

So, if it is your view to pursue this matter further, what we would welcome is an opportunity to enter into a conversation with your staff about it, such that some reasonable — as against unreasonable — outcome can be realized.

CHAIRMAN CLUFF: Dave, I think your perception was accurate.

Tom, you had another —

EXECUTIVE DIRECTOR TOBIN: Oh. No, I would agree, that I think that our aim here is to have buildings strengthened and to help people cope more effectively with earthquakes when they do occur, with whatever risks that exist at that time. And it's not to make, you know, freshmen more insecure than what they already should be on a university campus, but I think that would be an important thing for us to do.

I would also like to ask another issue that you might have covered. But I know that since many of us have become — including the University — concerned about seismic safety on our campuses, there's one structure that I go into every other Saturday, every fall, on the Berkeley campus, and usually never have a good time there, but go back year after year.

And in this period of time since we've known that that particular structure is on the Hayward Fault, houses a large number of people — now I'm worried because it's the alumni section — but since that time, the use of that building has been changed. I mean, it now has a Hall of Fame, and it has weight rooms, and it has coaches' offices and that sort of thing. And yet it's a building that's in a precarious location.

I don't know — does the University policy now preclude the intensification of uses of buildings that are in a precarious location or can — will make the hazard worse? And can this — is this something that can be controlled at the University statewide level, or is it controlled at the campus level?

PRESIDENT GARDNER: We've been controlling attendance by our win-loss record.

(Laughter)

VICE PRESIDENT BAKER: It becomes not much of a problem.

We hold the chancellors responsible for the use of their facilities. And so, that's sort of a question. I can't think of many examples where there's been intensified use. I can think of lots of examples where there's been the opposite: on a number of campuses — Riverside, Berkeley, and Davis come to mind — where we have converted buildings to dead storage rather than facilities that might be occupied heavily by people.

So, for the most part, we're going in the other direction. That may be an exception.

COMMISSIONER KOCKELMAN: Mr. Chairman, just one —

CHAIRMAN CLUFF: Tom would like to finish his.

EXECUTIVE DIRECTOR TOBIN: Well, I guess my last question — and this may be —

VICE PRESIDENT BAKER: Maybe we can get you better seats. That might help, huh?

EXECUTIVE DIRECTOR TOBIN: I don't know where there's a good seat. The President has the right idea in terms of the problems.

(Laughter)

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, to me, there's a number of things that have been said, not only just about posting, but also in terms of progress and plans that the University has.

And I think that this is something that the Commission should want to consider, about how we follow through on this, if there's another time that we address this issue a few months down the line as there's more certainty. Senate Bill 1250 or something like that, I'm sure, will be on the June ballot, and I — I mean, I think that we as a commission need to keep this issue really, you know, on the top priority basis for Commission time.

CHAIRMAN CLUFF: Yes. It seems to me that the issue of posting is one that applies to everything, and we need to understand this better in terms of the implications of legal liability if you post one building, and then, by implication, that means all the others that are unposted must be safe, and who — you know, how do you deal with some of those kinds of things?

So, I think we need to get input from the University, from the Structural Engineers Association, and a number of other people, and probably the Commission would kind of be a clearinghouse to help us recommend how we look at this and policy sometime in the future.

But I think, as painful as it was, the issue came up, and it helped us clarify some points that I think have been very useful. So, I —

Bill, one last point.

COMMISSIONER KOCKELMAN: Tom brought up the $4 million 1982 office construction in the stadium, which lies over the fault. You know more about that than I do.

But I have a question —

CHAIRMAN CLUFF: We can't hear you, Bill.

COMMISSIONER KOCKELMAN: Tom raised the point about the $4 million donor condition construction in '82 in the stadium, which lies over the Hayward Fault, which you're all familiar with. But I'm advised that your consultants, in '80, warned you quite strongly that that was not the place to put that facility, and that your policy at that time said you would not build new construction over active faults. This is the most active fault in the countryside. It moves 3/8 of an inch a year.

So, I — I really don't understand this back-and-forth thing, personally, you know, not as far as a commissioner goes, but just from a personal standpoint of a father whose daughter goes every two years to one of your games there.

VICE PRESIDENT BAKER: I'm not acquainted with the report you make reference to, nor the recommendation of the engineers. All I — I can recall that the campus decided to make those improvements from a donor's generous gift, and they had to either decide to do it or turn over the gift, because they simply couldn't — didn't have the funds to do anything with the stadium proper.

COMMISSIONER KOCKELMAN: Well, one of the advantages of putting —

VICE PRESIDENT BAKER: They did some work with it, some —

COMMISSIONER KOCKELMAN: One of the advantages of putting a warning sign up is not that just you will know and we'll know and the engineers will know, but the students and the parents and the donors and the visitors will know. And they might well give you some support in the legislature, or the donor might well say, "To hell with the new Hall of Fame under, you know, an unsafe structure; let's strengthen these other buildings. You can put my name on there as a strengthener."

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Last one. Last one.

Wouldn't you know that I have a motion to offer here. I would like to make a motion that the staff, the Commission staff, identify alternative methods of posting potentially unsafe state buildings and facilities, including information and diagrams on what to do in the event of an earthquake, and to present those alternatives at the February Seismic Safety Commission meeting.

COMMISSIONER KOCKELMAN: Second.

CHAIRMAN CLUFF: Any further discussion on the motion?

Yes, Paul?

COMMISSIONER FRATESSA: I hate to have them all sitting here when we get into this, but the only thing I have a problem with is we just identified all the unreinforced masonry buildings in the State of California, and that's in probably more detail than even the University has gone into. And if we're going to ask for state buildings, shouldn't there be some consideration given to that other classification of buildings, which is unreinforced masonry, which, if you followed the University policy, would be considered "very poor"?

So, I think the motion may, in fact, be singling out state buildings, when we actually have more information in front of us.

COMMISSIONER PESTOR: That's fine. Again, I want to emphasize, I'm not focusing on the University of California. I'm emphasizing all state buildings and facilities. And if you would like to amend the motion to include the unreinforced masonry buildings that have been identified in the state — and again, we're talking about staff identifying alternative posting methods — so, I'd amend the motion. That's fine.

COMMISSIONER FRATESSA: I'd like it included.

CHAIRMAN CLUFF: Seconder agree?

COMMISSIONER KOCKELMAN: Second.

CHAIRMAN CLUFF: Randy, I'd like to ask Tom what implications this would have. As I understand it, he'd want the staff to prepare something for the next meeting.

We're overloaded right now in terms of things that need to be done, with the legislative session that's on and so forth, and while I agree in concept, I'm concerned about another thing that, Tom, you and your staff have to do. And not that it isn't important; it's just that — can we do it right now?

EXECUTIVE DIRECTOR TOBIN: Well —

CHAIRMAN CLUFF: Is there another way?

EXECUTIVE DIRECTOR TOBIN: If the Commission approves the motion, we will come back to you in February with alternatives on posting buildings. You know, I think there's no question — the real — I understand that we will be — this will be a matter that we'll spend several person-days on, we'll consider, but we're going to be — we would not be able to do it exhaustively.

And we can provide some ideas. I don't know how many alternatives that might exist, but, you know, from the type of warning that you might put on a sign, we can give — a sign, we can give a couple examples, the kind of requirements that you might have.

We can give a couple examples, but we will not have the time to do an analysis of liability implications of signing or not signing. We wouldn't have time to do any kind of review of the literature, in terms of the sociological response to signs.

Perhaps we can get some examples of signs that do exist. As Commissioner Kockelman pointed out, there are Prop 65 signs on buildings about the presence of toxic materials, and we can give you some examples of this, and, you know, be glad to, if that would help foster the Commission's discussion, which, I agree also, is very important.

But please recognize that I do not have the money in the budget to pay for any more overtime. And what we do during the working hours will mean that we won't do other things. And this is an important issue; we will do it. There will be other things that we won't do in the meantime. And it's the priority-setting that this Commission is responsible to do, and I — we will do it if you ask.

What the product will look like? We'll do the best we can.

COMMISSIONER KOCKELMAN: Mr. Chairman, can I make a suggestion that might resolve this whole thing?

We really shouldn't waste a lot more time on signing. We've got, you know, ten days of testimony on many other problems more important.

Well, suppose we do this. No matter what we suggest to the University, it's only a suggestion.

COMMISSIONER BOLT: Excuse me, Mr. Chairman, but could Bill talk into the —

COMMISSIONER KOCKELMAN: Excuse me.

COMMISSIONER BOLT: — because I can't hear —

COMMISSIONER KOCKELMAN: Whatever — whatever letter we write to the University or suggestion we make, or whatever we say to them this day and ask for reports or something, ten years and over a billion dollars is something we're never going to successfully, you know, well monitor with our staff at our Commission, because it changes and there will be other problems.

The University has resources, you know — President Gardner mentioned them. They're just awesome resources. They've got, you know, psychologists that can come up with all the signs tomorrow that you would sit and pick.

May I suggest that we consider later on just a simple letter to them, saying, "We think, in our wisdom, you know, our best shot is in — for the next ten years, until you get these darn things strengthened, why don't you sign them?" There's a — it won't disrupt anything. It'll really get people's attention. And let them design the signs.

Now, some of the chancellors will put them up, you know, in the washroom. You won't see them. Others will be more concerned. UCLA, you know, they went and leaked that thing, "Campus At Risk." Man, they'd probably put up a huge sign. They'd drag every donor in there and get money out of it, et cetera, et cetera.

CHAIRMAN CLUFF: Well, Bill, we have a motion before us that Randy has made, and you seconded it. I think let's deal with that first.

It seems to me, Randy, that we might be able to deal with this as an issue if we had a little more time than just a month. Perhaps we could leave the timing up to the staff to come back to us in a future meeting to give us some alternatives, so that you're not crammed into doing —

COMMISSIONER PESTOR: I'd comment on that, since I made the motion. I think it is a high priority, and I think that we're talking about recommendations here. I was pretty adamant about sending a letter last month and made a big case for that, and I think President Gardner has raised a good point about we all have different impressions of what those signs should be. Certainly there have been some draft letters that already provide some indications of what those signs should do. I think we have some good background information already.

And I think one month is fine, and I think it's a high priority, and I would like to leave my motion the way it is.

CHAIRMAN CLUFF: Okay. Any further discussion on the motion?

Pat?

VICE CHAIR RIORDAN: Mr. Chairman, if I might —

CHAIRMAN CLUFF: Oh.

VICE CHAIR RIORDAN: And I normally agree with Mr. Pestor, but I'm going to have to argue against the motion, simply because I think it is a very big issue, and recognizing a limited staff — it's not like we have unlimited staff, and particularly as it relates to, I think, some of the legal ramifications, what I might be more comfortable with would be, say, a methodology of how to proceed to understand the request for signing. But a month is certainly, in my opinion, not adequate to really address what is a very major issue and what might be something that you have to bring a great deal of resource to bear on it, as it relates to just the legal implications.

I would like to see more time.

Thank you.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: I just wanted to add that I think this is going to be a much more complex issue than it looks like on the surface, because the message that you put on an unreinforced masonry building may be far different from the message that you put on a state building that was built two years ago. The safety measures that people should take are going to be different for, perhaps, different buildings.

Also, I think we need to look at studies that have been done on human behavior. What do people do? You know, it's not as easy a thing to do as perhaps fire safety or some of the other issues that have been easily posted.

COMMISSIONER BOLT: Mr. Chairman, I'd move a motion, an amendment to delete the timeframe in this motion.

COMMISSIONER FRATESSA: I'd second that.

CHAIRMAN CLUFF: Okay. Discussion on the amendment?

COMMISSIONER UMEMOTO: Yeah, I have a comment. Senator Alquist has SB 5x, which requires currently, per Senator Leroy Greene's amendment, to require posting on high-occupancy buildings. Since it's in special session, we don't know when that's going to get out, and he's instructed me that he will basically follow the Commission's position on it. And if — and for SB 5x being a special session bill, it's something that he definitely needs Commission direction on.

And that may be something that's going to be passed out, maybe even before our next meeting. It may not be passed out by our next meeting, but I think we need to get — I mean, my boss is going to certainly want a little bit more direction on what he should — how he should proceed with that particular bill.

And it's not directed specifically to the University of California, but it is in special session and can, depending upon what the legislature does, be passed out, in fact, even next week, if they so felt.

VICE CHAIR RIORDAN: Well, yes, but — may I say just, though —

COMMISSIONER UMEMOTO: Not to overindulge, per se —

VICE CHAIR RIORDAN: Yeah.

COMMISSIONER UMEMOTO: — but just some preliminary type of —

VICE CHAIR RIORDAN: But to react and not to think it out, I would hope the senator would recognize you really have to think this out. And I guess I'm very keenly aware because of Prop 65 and what I don't think it accomplished. And I'd like to have something that really accomplished something if we were going to do it, that's well thought-out.

So, hopefully, there would be some restraint on people who — and to give it some time and some thought. I mean, you know, there's many more implications than I think just hit us initially, and that you really have to think how to do this, and how to do it correctly.

CHAIRMAN CLUFF: Tom, could you respond to the timeframe?

EXECUTIVE DIRECTOR TOBIN: Well, yeah.

Mr. Chairman, I would say that our next agenda, we should have the issue on the agenda, and we can come forward with a memo that at least lists the issues.

What I want to make sure is clear, I mean, there's no way in the world that within this time, we could give you a good analysis of occupant behavior for various alternatives of signs, you know, or maybe even for the liability issues. But at least we can say, "Here are the liability issues, here are some of the occupant behavior questions, here are some of the different kinds of messages," and do something that's short, within, you know, a few pages.

And as Commissioner Umemoto has pointed out, this is in Senate Bill 5x, and as you all know, another tab item here is the high-occupancy bill, if we put that in as a possible option for an enforcement mechanism on high-occupant buildings. And so, yes, it is an issue that has come up in more than one quarter, Assemblyman Hayden's issue, Senator Greene's issue. The Commission is going to have to face it sooner rather than later in this session.

But I guess my point is, is that I don't want to lead you to believe that we're able to do a sort of definitive analysis of this between now and February. But I think we can help the Commission deal with it in a policy discussion between now and then in a very effective way.

CHAIRMAN CLUFF: We need to take action on the motion to amend. All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(Chorus of nays)

CHAIRMAN CLUFF: I think we'd better have a roll call on this.

COMMISSIONER UMEMOTO: This is on the motion or the amendment?

CHAIRMAN CLUFF: Let's call for a vote.

COMMISSIONER PESTOR: This is the motion to amend, which is not —

COMMISSIONER SCOTT: What are we voting on?

EXECUTIVE DIRECTOR TOBIN: This is a motion to amend the motion on the floor to delete the February deadline.

COMMISSIONER SCOTT: The motion to delete the deadline, okay.

CHAIRMAN CLUFF: Yes.

Okay. So, all in favor raise their hand, please.

(Show of hands)

CHAIRMAN CLUFF: Opposed?

(Show of hands)

EXECUTIVE DIRECTOR TOBIN: I think it failed.

CHAIRMAN CLUFF: Okay. The motion failed.

Let's go back to the other, the initial motion.

Randy, does Tom's explanation satisfy what you could do? Then I think we can go ahead.

COMMISSIONER PESTOR: Yeah.

CHAIRMAN CLUFF: Okay. All in favor of the motion, say "aye."

(Chorus of ayes)

CHAIRMAN CLUFF: Opposed?

(Chorus of nays)

CHAIRMAN CLUFF: Show of hands. All in favor?

(Show of hands)

CHAIRMAN CLUFF: Opposed?

(Show of hands)

CHAIRMAN CLUFF: Motion carried.

Thank you very much, President Gardner and your colleagues, for coming to address us. I think we've adequately discussed the issues, and we really appreciate you taking the time out.

PRESIDENT GARDNER: We very much appreciate the time you've given to this and the opportunity for us to share it with you in a more personal way.

Those of you who are uncomfortable attending and watching the Golden Bears in Memorial Stadium, UCLA does play in the Rose Bowl.

(Laughter)

CHAIRMAN CLUFF: We're behind on the agenda, but we do have some items that we have moved off. I'm going to make some changes and take the Office of the Architect first, and if we can't, get — okay. Well, let's do that —

COMMISSIONER BOLT: Excuse me. Excuse me, Mr. Chairman.

CHAIRMAN CLUFF: Yes.

COMMISSIONER BOLT: Point of order. Some of us are not sure of the voting, what the numbers were, if you could just inform us how you count the numbers.

EXECUTIVE DIRECTOR TOBIN: I counted — the first vote, I had 6 to 7, failing 6 to 7. I know I had 7 —

CHAIRMAN CLUFF: The amendment.

EXECUTIVE DIRECTOR TOBIN: The amendment. I know I had 7 votes against it.

CHAIRMAN CLUFF: Yes.

EXECUTIVE DIRECTOR TOBIN: Okay.

COMMISSIONER BOLT: The second vote?

EXECUTIVE DIRECTOR TOBIN: The second motion, I had 7 to 6 in favor.

CHAIRMAN CLUFF: Right.

EXECUTIVE DIRECTOR TOBIN: I actually had 8, but I was counting and I got 6 afterwards. I think there are 13 of you here.

COMMISSIONER BOLT: I wasn't sure how several people voted.

EXECUTIVE DIRECTOR TOBIN: No. It was 8 to — the second motion was 8 — 8 to 6.

CHAIRMAN CLUFF: Yeah.

Are you satisfied, Commissioner Bolt?

EXECUTIVE DIRECTOR TOBIN: The first motion failed.

COMMISSIONER BOLT: I know. I have the first motion.

CHAIRMAN CLUFF: Yeah.

Okay. So, what I'd like to do, if we can, before our lunch break, take both the Office of the Architect and — Pat, I think, is still here — see if we can't get Dick in on OES' response, prior to breaking for lunch.

EXECUTIVE DIRECTOR TOBIN: Mr. Chairman, Mr. Paul Neal, who's the new State Architect, is here, and he has to leave at noontime to catch an airplane. And rather than have the full State Architect item, I think it would be good if we could at least introduce Paul — you've all met him before — and have him make a few remarks, but then move to Dr. Andrews, because he has a meeting right after lunch. And if we could take him and the OES group before, I think that we could take a section that's really out of order right now and get at least those two done.

I do want to really point out to all of you that Agenda Items VI and VII are very important for the Commission, and we're going to have to, you know, have a good, solid discussion on these matters sometime this afternoon, with a quorum.

COMMISSIONER UMEMOTO: So, you expect VI and VII to be discussed this afternoon after lunch?

CHAIRMAN CLUFF: Can't hear you, Keith.

EXECUTIVE DIRECTOR TOBIN: Yes, after lunch.

CHAIRMAN CLUFF: Yes.

Welcome, Paul. We all know of you and your past activities with us, and we are happy to see you take the position of State Architect.

MR. NEEL: Thank you very much. I'm pleased to —of course, to be the new State Architect, and pleased to continue working with the Commission. I've enjoyed the relationship in the past, and I'm looking forward to a good one in the future.

And I suppose you — Pat is on the agenda now?

CHAIRMAN CLUFF: Perhaps — Tom mentioned that you do have to leave shortly. Is that —

MR. NEEL: Yes, I need to leave fairly shortly, yes.

CHAIRMAN CLUFF: Maybe, if there are any comments or questions that the commissioners would like to ask of Paul prior to his departure, that would be useful. And then we can — we can take up the State Architect and Pat Campbell's comments after lunch, and we're going to take OES next. So —

MR. NEEL: Okay, fine.

CHAIRMAN CLUFF: Let's give you the next five minutes to —

MR. NEEL: Sure, sure.

CHAIRMAN CLUFF: — to have, if there's any points from the commissioners.

Any questions of the State Architect?

CHAIRMAN CLUFF: Yes, Commissioner McMullen.

COMMISSIONER McMULLEN: Well, Paul, how do you feel the team inspection concept that was conducted by your office and other offices of state government, state fire marshal and some others, did as far as working in a team concept as opposed to individual concepts on reinspections of buildings that were damaged?

MR. NEEL: Well, from the reports that I've read, after I arrived in the office, it looks to me that it's very successful. Pat will speak to that today.

The only unfortunate thing was that it took a lot of staff away from the office, and nothing was done there, but that's one of those things that happened. And I think it was a very excellent opportunity for us to prove that that concept does work. And it did work. And the — even the volunteers — and I might add that the engineering associations and the American Institute of Architects, California Council, supplied a number of volunteers in the Bay Area, and that was also very helpful — so, I'm much encouraged.

CHAIRMAN CLUFF: Further comments, questions?

Stan?

COMMISSIONER SCOTT: Yeah. This is just sort of a comment.

Paul, I hope you will, despite your new responsibilities, be able to continue serving on the Commission's Committee on the Architect's Role in Hazard Mitigation, or else help us choose a worthy successor, if we can find one.

MR. NEEL: Well, I will serve if you'll have me. How's that?

COMMISSIONER SCOTT: All right. Fine.

CHAIRMAN CLUFF: Further comments, questions?

(No response)

CHAIRMAN CLUFF: Well, Paul, thank you very much —

MR. NEEL: Thank you.

CHAIRMAN CLUFF: — for coming over.

MR. NEEL: Thank you very much.

CHAIRMAN CLUFF: We appreciate it.

Pat, if you wouldn't mind, we need to take Dick Andrews' agenda item next, and we'll catch you after we have lunch.

MR. CAMPBELL: Okay. That's fine.

CHAIRMAN CLUFF: Okay, fine.

MR. CAMPBELL: That's great.

CHAIRMAN CLUFF: We'd like to invite Dr. Richard Andrews to come forward. And Dick is an old friend of everyone here, and working in a very cooperative fashion to help address the seismic safety issues in the State of California.

Dick, it's been a while since we've seen you, and we're very pleased to have you here today.

DR. ANDREWS: Nice to be here. Thank you. And thank you very much for making the adjustments in the agenda. I appreciate it.

First, on behalf of the Office of Emergency Services, let me express our appreciation to the Commission for the timeliness and the thoroughness of the hearings that you've held since early November relating to the Loma Prieta earthquake. We have already benefitted from the comments of several local officials regarding their experiences in the days following the October 17th event, and attempted to make some changes in ongoing programs of recovery and relief, on the basis of some of the comments that we've previously noted.

I'll talk about two broad categories: first, in general, the emergency response to the earthquake and actions that have been taken since October 17th, and try to learn from those experiences; and, secondly, briefly comment on the hazard mitigation work that we're underway with. And I believe later on Mr. Hamner from FEMA will also reference the hazard mitigation effort from FEMA's perspective.

On balance, we feel the emergency response to the Loma Prieta earthquake worked remarkably effective, particularly at the local level and among the residents of the affected communities. The earthquake demonstrated again that the strength of the California emergency services system is at the local level.

Moreover, the remarkable performance by the residents of the Bay Area underscores the importance of the awareness campaigns that state and local government and the private sector have been conducting over the past five years, and the importance of continuing an aggressive program of public awareness as part of the overall earthquake preparedness efforts in this state.

State-level operations also worked effectively. There was never a critical shortfall of resources. Federal agencies provided valuable supplementary support, particularly the Department of Transportation, the Corps of Engineers, the U.S. Coast Guard, and the Department of Defense.

Emergency operations in Sacramento worked effectively, though the experience again dramatized the limitations of the current OES headquarters facility to function as an emergency operations center during a major earthquake.

OES utilized its volunteer engineer program to provide support to local governments on an unprecedented scale. Our count is that at various times, over 2,000 engineers and local building officials from across the state worked in various affected communities. OES benefitted from the fact that we had been — that we had recently completed the ATC 20 work, in which a new set of procedures and field manual had been developed in the aftermath of the Whittier earthquake.

We had conducted a training session for local officials on the ATC 20 material only a month before the earthquake, and we are meeting with the officials of the Structural Engineers Association of California on January 23rd to review the experiences from Loma Prieta, and with California Building Officials during their annual meetings in February, to also review their experiences.

Therefore, there is much that we can be proud of in the emergency response to the most significant Northern California earthquake since 1906. We have, however, identified many areas that need attention.

First, we need to develop more effective procedures for a graduated response, in which the level of staffing is scaled to the evolving information regarding the scale of the emergency. Closely related to this is the need to follow the model developed by the State Emergency Medical Services Authority of identifying critical time-sensitive resources that address critical lifesaving operations, and to begin moving and staging these resources prior to a specific definition of need at the local level.

Second, training programs need to be enhanced for all levels of government, including elected officials, to minimize ad hoc responses that could jeopardize operational efficiency during an emergency in which there were numerous life-threatening situations and limited resources. It is important that we recognize that systems that worked effectively on October 17th could easily be overwhelmed in an even slightly larger event, or an earthquake in which the epicenter was closer to heavily populated areas, or in which the strong ground motion lasted just a few more seconds.

Initiatives proposed in Governor Deukmejian's '90-91 budget address many of the critical needs of emergency management. The proposals build on the experiences drawn from the Whittier Narrows earthquake of October, 1987, the Loma Prieta earthquake of October, 1989, and the initiatives proposed by the Seismic Safety Commission in *California At Risk*.

Following review and, hopefully, approval by the legislature, OES would work on construction of a new emergency — new emergency operations centers in Sacramento and Southern California. These facilities would serve as the coordination centers during major earthquakes, as well as at the time of other emergencies that regularly occur in California.

Second, a new satellite-based communications system would be deployed to provide the key link between the counties and the state during emergencies. In addition, these funds would be used to enhance the state's high-frequency radio capability and to provide for a cache of cellular telephones for use during emergencies.

Third, a major program to organize, train, and equip approximately 20 multidisciplinary urban search-and-rescue teams would be inaugurated during the 1990-91 fiscal year. These teams would provide California with the type of search-and-rescue units active in Western Europe and Israel.

Fourth, the staffs of BAREPP and SCEPP would be augmented by 10 staff, including two engineers who will oversee the elaboration, training, and use of volunteer engineers and local building officials at the time of future earthquakes. The planning areas of the two projects would be expanded, and funds provided to undertake an intensive program of regional planning to develop the specific protocols and procedures to be used to coordinate those critical functions, like transportation, that can be impacted on a regional scale in a major earthquake.

Fifth, the California Specialized Training Institute would add four positions to its staff in order to expand and accelerate their training for local governments and the private sector in earthquake emergency management.

Sixth, funds would be provided to enable OES, in cooperation with other state agencies, to carry out an ongoing program of training for the various organizations and individuals that have responsibilities at the time of a major earthquake. The experience of October 17th dramatized the value of the training and the exercises that have been held in the past.

From the perspective of OES, and, I think, emergency management in California in general, these initiatives proposed in Governor Deukmejian's budget represent a historic, unprecedented commitment to enhancing emergency operational capability in California.

I'll now make a few comments regarding the hazard mitigation effort.

As part of the overall recovery effort, OES is also involved with FEMA in the development of a hazard mitigation report on the Loma Prieta earthquake. This report, required by recent federal legislation that made changes to Public Law 93288, attempts to address issues related to the October 17th earthquake in a comprehensive manner. OES has submitted the Seismic Safety Commission's "*California At Risk*" to the Federal Emergency Management Agency as the state's long-term hazard mitigation program. And on the basis of the information we've received from FEMA, we believe that it is being accepted by FEMA as the state's long-term program.

Both the Loma Prieta report and the earlier report on the Whittier Narrows earthquake will serve as supplements to "*California At Risk*" for the purposes of funds that potentially could be available through the federal disaster assistance programs.

Because of changes in the federal formula for funding hazard mitigation projects, OES will continue to explore funding alternatives with FEMA, particularly areas in which state dollars and/or local dollars might be matched by federal resources. Because this is one of the first instances in which the new regulations related to hazard mitigation is being applied on a broad scale, as well as the complexities of earthquake hazard mitigation, in contrast to, for example, flood emergencies, the final course of this effort is as yet undetermined.

I'll be happy to try to answer any questions that members of the Commission might have.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Thank you.

Bruce?

COMMISSIONER BOLT: Some very, very good things in there, Dick. You must be very pleased. I understand there will be augmentation of the Los Angeles and the Bay Area programs with engineers on the staff?

DR. ANDREWS: Yes.

COMMISSIONER BOLT: I'd like you to tell me, if you can, how much FEMA money — how much federal money flowed to the program, I mean, to help you in this emergency?

DR. ANDREWS: Well, the programs that are specifically related to the recovery and reconstruction effort are ongoing, so that the flow of dollars is continuing, and we're really, in many respects, in an early part of the whole process, that is, funds both to public entities for damage to public facilities as well as to individuals and small businesses that suffered losses. And as yet, we don't have any final figures on exactly the funds that would be available.

COMMISSIONER BOLT: Well, you're as close to FEMA as anybody. Would you like to comment about the level of their effort in this regard, related to this earthquake?

DR. ANDREWS: I think that — that building on the experiences of the Whittier Narrows earthquake, and on a much larger scale than was required in 1987, that the level of — and promptness of the FEMA effort related to the recovery programs, and those programs that they're directly responsible for administering, has really been unprecedented, and a very strong, cooperative effort. And we've been very pleased in almost every regard with the effort from FEMA, the commitment of staff resources, the cooperative working relationship that we have with them, as well as their effort with regard to local government. So, we've been very pleased with the FEMA effort.

COMMISSIONER BOLT: Well, I'm interested to hear you say that, because I thought you would be someone to go to to ask the question, "Given a much bigger earthquake, or an earthquake like that nearer to a metropolitan area, how much more effort should FEMA be prepared to put into the — into the effort?"

DR. ANDREWS: I think the area that we need to pay the most careful attention to — and I know that the officials at FEMA are, I think, cognizant of this — is the response role by the federal government and by the federal agencies, and that it was not necessary in this earthquake to really draw on federal resources to a very great extent.

COMMISSIONER BOLT: Yes.

DR. ANDREWS: But, very clearly, we were at the threshold where that would have been required and necessary. And I think we need to work on, as I mentioned briefly in my comments, on a — both at the state level and at the federal level, we've developed special plans that we call "catastrophic earthquake plans." And in some respects, this earthquake fell right at the threshold of catastrophic. And I think we need to — we need to have a clearer set of procedures where we can basically scale up to that catastrophic plan and mode of operations more easily than we're currently able to do.

Also, the earthquake underscored something that I think we've intellectually felt for some time, and that is that the basic strength of the California system is at the local level. But in an earthquake emergency, particularly one where there are a number of life-threatening situations, it is extremely difficult for local governments to simultaneously respond to the immediate needs that they have identified, assessed those needs, prioritized those needs, and communicate their request to state and federal governments, in turn, in a timely way so that resources can be applied to critical lifesaving operations.

So, I think we need to place greater emphasis upon not waiting for those specific need definitions at the local level, but beginning to move critical resources, just on the confirmation that a major earthquake has occurred.

One of the things that we need to work on is, specifically, issues regarding reimbursement, under situations in which you undertake these actions, but the resources are proven not to be necessary. And I don't think that's a major problem, but there are a number of kind of fine-tuning things that we need to be involved with.

So, I would say that the major area that — in terms of the performance with regard to the recovery and reconstruction, that we're on very solid ground. Where we need to work is on procedures related to the application of state and federal resources, particularly federal resources, in a more timely way, in the event of a catastrophic earthquake, and also the mechanisms and systems at the local level to use federal resources, in particular, in an effective way, so that there's not simply an overwhelming of local capabilities by massive numbers of federal resources.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: On the very narrow part of the earthquake response having to do with damage assessment, there was a paper debriefing by the Structural Engineers of Northern California that was sent to OES. Now I'm going to ask you, did you get it, or have you seen that?

It has a number of recommendations on the damage assessment process.

DR. ANDREWS: I'm not sure that I've seen that specific report, but, as I mentioned, we have scheduled a meeting with various officials from SEAONC to — on the 23rd of January, to review some of that material, and we did — we have met and discussed with ATC following up on the work that they previously did, and trying in every way we can to benefit from that experience. And we have proposed, in the governor's budget, that we have full-time staff in the future that are not only the ones that would coordinate the program when an emergency occurs, but also oversee the training efforts that would be required.

COMMISSIONER FRATESSA: I would — Pat Campbell was here a second ago — and that is our state association. I would really strongly recommend that whoever's going to that meeting have a copy of that document, because it is the experiences of those who actually were involved in the crisis situation, as it relates to damage assessment.

DR. ANDREWS: Yeah. Our general impression is that one of the things that — one of the problems that we had was the need to have a — and it gets back to training — a clear uniformity of — obviously, there's an element of professional judgment that cannot be eliminated, and should not be eliminated, but there was a lot of a lack of uniformity in the standards that were being applied. And some of it, I think, can be handled by training for the engineers, some of it can be addressed by more careful work with local building officials, because there was, at the local level, some different standards that were being applied.

COMMISSIONER FRATESSA: I think it is training, but also the education of the building officials as to what they, in fact, have to be doing. I just would like to be sure that you do have a copy of that, and if for some reason you don't, I'd be glad to get you a copy prior to that 23rd meeting, because I think it's a valuable document.

The second question, and I think you've answered it, but one of the recommendations is the upgraded training level. And is OES going to be able to fund some of that training effort —

DR. ANDREWS: Yes.

COMMISSIONER FRATESSA: — to get these damage assessment people and the building officials up to speed?

DR. ANDREWS: Yes. Again, in the — in Governor Deukmejian's budget for next year, there is specific money that would be used on an ongoing basis for the training of that — of that program, of the individuals who are involved in that program. So, yes, we would — we would expect to support that program on an ongoing basis.

COMMISSIONER FRATESSA: So, will that come up, then, on the 23rd when you meet with the Structural Association, the interaction on how to do that? I think it's very important.

DR. ANDREWS: Yeah. We will continue to work with SEAONC and with ATC. And also, one of the outcomes of the Loma Prieta earthquake was an even higher level of interest on the part of CALBO and the local building officials in being more actively involved in the process, both in terms of providing building officials to communities in a mutual-aid kind of fashion, but also the management of the activity of building inspections. That clearly needs as much work as we can put into it.

COMMISSIONER FRATESSA: Thank you.

VICE CHAIR RIORDAN: Mr. Chairman, could I follow along on that?

I think it is very important that we educate the local building officials, and particularly trying to reach down to some of the smallest of communities, because they sometimes may only have one or two building inspectors, and I think they need to know what resources are out there and available to them, and what kind of mutual aid, and things that we have.

In representing local government, let me just share with you one, small experience.

I don't think I ever realized the grave responsibility that the building — the head building official has on a local entity until, perhaps, this particular incident, and because I think it was more far-reaching than perhaps just the Whittier Narrows.

DR. ANDREWS: Sure.

VICE CHAIR RIORDAN: When I asked that our building official come — and we sent up a bevy of other inspectors — but one where he could observe what was happening, he was really rebuffed, and I felt very badly about that, because I was the one who had put a great deal of pressure on him to change his schedule to make himself available. And my only thought is that when you have that interest, we shouldn't — we should somehow involve them.

It did not work out, and I'm sure — you can't blame any one individual for that, but I would hope — because there's no better learning experience than to be right there, on the spot, at the time of an event — that we not say, "No, we don't want you." You know, if there's some reason to believe that they are the head person and that they want to come to learn about the management side, that they somehow be included.

And I don't know how you do that, but maybe some thought could be given to that.

DR. ANDREWS: There's — I think that same issue is one that needs to be addressed in a number of different ways — essentially, the issue of the almost spontaneous offer of volunteer assistance by individuals who have a variety of expertise that can be — can be provided.

I know, in reading the report by the City of Los Angeles inspection team that went up to review the earthquake, that's one of the things that they really highlighted, was the fact that most local governments didn't really have in place a mechanism, or did the state, really, for using the various volunteer resources that were offered.

Clearly, that — it can be a problem. It can overwhelm people who are already overwhelmed, but I think we do need to give attention, not only in the case of building officials, but other experts that can provide valuable assistance, and management systems in place to make use of it, so that it is really an asset and not an addition to the problem that they're already facing.

VICE CHAIR RIORDAN: Thank you.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Dick, could you just say a word or two summarizing the way OES made use of the BAREPP and SCEPP staffs in the post-earthquake response? Kind of — where were they deployed, and what did they do?

DR. ANDREWS: The BAREPP staff was, many of them, still in their offices at 5:04 on the Tuesday afternoon when the earthquake occurred, and they were there, then, for a very long period of time. Many of them were involved in meeting the enormous public information demands. In many respects, apart from the presence of the CalTrans officials and the Highway Patrol officials and the other state agencies that were directly involved in emergency activities, the BAREPP staff was, in many respects, the — kind of on point for public information requests and demands that were being made in the area, so that they did a great deal of that, of that kind of work.

Some of them worked at the Region 2 office in Pleasant Hill during the second and third and fourth days, in providing assistance and support to the staff there.

The SCEPP staff was basically deployed to Sacramento, and provided assistance to the OES and other state agency staff working at the state operations center.

So, they — the entire staff of SCEPP and BAREPP were involved, and they continued to be involved in the — in the recovery effort. Some of the staff that have bilingual capabilities were in the field in Watsonville and Hollister, working with the Hispanic populations in those areas as outreach personnel.

The director of BAREPP served as the lead legislative liaison person in the disaster field office, and Paula Schultz, the deputy director of BAREPP, continues to be very much involved in the hazard mitigation work.

So, there —

COMMISSIONER SCOTT: This has gone on for some time. It wasn't just a matter of the first four or five days.

DR. ANDREWS: No. It went on for — in fact, in many ways, continues to go on, although at a somewhat reduced level.

CHAIRMAN CLUFF: Pat?

COMMISSIONER SNYDER: Dick, in the programs that you mentioned in the governor's budget, I didn't hear a mention of public education. Where do you see that fitting in, and is there additional funding for that, and how will that be accomplished?

DR. ANDREWS: In the current year, there was — last year we submitted a budget change proposal that augmented the effort specifically related to Earthquake Preparedness Month, both in terms of hiring full-time staff, who are now assigned in Sacramento to work full-time on Earthquake Preparedness Month, as well as augmenting the public information budget, I think $65,000 to $70,000 a year, again specifically for the effort related to public information.

Also, there was a substantial program that drew on monies that were appropriated by the legislature directly related to the recovery operation, for public information efforts and demands that were realized, both in Northern and Southern California, in the first weeks after the earthquake, when people had an almost insatiable demand for information related to the earthquake. And also, a portion of the $1.4 million that the governor has recommended in his '90-91 budget that would go to SCEPP and BAREPP would be to augment their public information efforts.

COMMISSIONER SNYDER: Well, question number two, I've attended hearings with the Seismic Safety Commission, and with other agencies as well, in the damaged areas — I was in Watsonville-Santa Cruz yesterday. And the problem that we seem to hear the most about is the problem of the loss of housing. This doesn't come as any surprise to you, but it is — it's not going away. It's something that's getting worse instead of getting better. And as I look at our potential numbers in Southern California, it really gives me some sleepless nights.

What can be done with the state regulations, the FEMA regulations, to help us address some of these long-term housing issues and the eligibility of people who live in houses where they have three, four, five families, legitimately living there and paying rent, but because of regulations, only one family can be assisted? Those other families are then out on the street and become homeless people. What can we do to help address that?

DR. ANDREWS: In the — in the short term, in the operations at the disaster field office, we've worked and negotiated with FEMA to try to give as much flexibility as possible to the programs, so that modern demographics can be taken into account in the administration of some of those programs.

I think, on a long-term basis, that this needs to be given additional thought in terms of the basic regulations that govern the federal programs. And we've made those recommendations to the Congress, in various testimonies that we've provided to them, for example, the House Committee on Science and Technology.

FEMA has a review group that's coming to California, I believe, the week after next, that has been requested by the Office of Management and Budget to review the whole experience of the recovery effort, and we intend to make that — you know, that point again.

I think that it's important, though, that we really emphasize that — and the Commission members know this full well — earthquakes basically simply exacerbate existing problems. And the problem of low-income housing is not a disaster problem; it is a fundamental public policy problem of the state and federal government that we really need to address. And something like Loma Prieta brings it to the fore, and it also unquestionably falls disproportionately on the low-income people. They occupy those structures that are the most vulnerable.

And so, it not only exacerbates the problem because we don't have a consistent program for building new low-income housing, and it adds — the way it exacerbates it is that people tend to live in those structures that are the most vulnerable.

So, clearly, it's a — it is — we saw the kind of tip of the iceberg in Whittier, we saw a bigger portion of it here. In a larger event nearer either the Bay Area or Southern California, it's going to be a horrendous problem.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. Just one real quick comment.

A lot of constituents in Assemblyman Cortese's district, you know, they run into problems on getting assistance, and I just want to let you know that Bev's doing a great job, as far as, you know, working that out, when I give her a call. So, I appreciate that.

But I hope that if there's any things that can't be taken care of administratively, it may require some amendment of the Natural Disaster Assistance Act to make these things flow, make assistance flow more quickly after an earthquake. If you could let us know, Keith or me or Tom, that would be really helpful.

DR. ANDREWS: Yeah, we'll — sorry.

COMMISSIONER PESTOR: And the other issue is on the mitigation money that comes from FEMA — and I had stepped out for a while. Who is going to be setting the priorities on where that money goes, if we — once we're eligible to implement the mitigation program? Is OES going to set the priorities on where those mitigation funds go, whether they go to UC or whether they go to CalTrans or local buildings or anything like that?

DR. ANDREWS: Well, the — in fact, the commitment I have this afternoon is to a meeting that is, in part, designed to address that specific issue. It really hasn't been entirely resolved. Our intention is to — that will not be a unilateral decision by any means, of either — by OES or FEMA, but it would involve the local input into that process.

There are various alternatives we are considering. One of them is to — is to utilize the BAREPP board, since it already has local representation, elected officials, and kind of a cross-section of the Bay Area communities, as a group that would help us in that process of priority-setting.

But clearly, it's not only — it's essential that there be local input, and that also the priorities be set in such a way that there is a fairly even distribution of the funds, because the hazard mitigation money, while it potentially could be quite sizeable, it's not a bottomless pool of money. And our estimate is, all together, with the federal money, and the potential state or local or other match to the money, the upper limits of this will probably not exceed $100 million.

So, that's — again, that's a sizeable sum of money, but it's not — it's not going to do everything that people want. And we've already received initial lists of projects from some counties that probably would absorb at least two or three times that amount — that amount of money.

With regard to your earlier point, one of the indices that we've been looking at to try to assess how the assistance program is going is the weight of appeals, you know, how many people are appealing their initial award, and what's the rate at which those appeals are resulting in increased claims. And while I don't have the specific current figures, I can say the rate of appeals are far below what they were in Whittier, which, from our perspective, means that we're doing a better job. And we try to really emphasize this right from the beginning, in the initial inspections and the initial awards, so that we're not having — we're not protracting this process unnecessarily for the individual victim.

CHAIRMAN CLUFF: Dan?

COMMISSIONER EBERLE: Hi, Dick. Nice to see you again.

DR. ANDREWS: Good to see you.

COMMISSIONER EBERLE: I hear some major changes, which are very encouraging. I see where you want to stress the operational capability, increase staff, talk about procedures for different levels of earthquakes — I know you've done some of that already — improve training, and major changes you're — kind of an assumption that the local jurisdictions are going to be overwhelmed and you're going to start staging resources right away. I think that's very, very good move.

You mentioned also about the good response, and I think there has been, like you said, some major improvements in emergency response throughout California for those levels of earthquakes. You also pointed out that it can be overwhelmed with just a little bit more. I'm a little bit more inclined to stress that aspect, rather than the positive response that — it was positive, but I'm a little concerned that people might get the wrong reception, that we are ready to handle a major earthquake. And I don't think we are.

What we heard were some of the things was the coordination and the communications were problems. Do you — in the earthquake, did you use, as it says in the Southern California Emergency Earthquake Response, at a Level 3 — and I don't know whether you consider this a Level 3 or not — that you would use the operational area? Did you use the operational area, and how — if you did, how do you think it worked?

DR. ANDREWS: No. We did not — we did not use the operational area concept across the board in this. We did, de facto, because San Mateo County, City and County of San Francisco, are already, in effect, operational areas, but we continued to work with each of the local jurisdictions.

The proposal with regard to the new emergency communications capability will, in many respects, I think, reinforce the de facto function of the operational areas, in that the plan, as proposed in the budget, would have the state acquire the up- and down-links, that is, the actual satellite dishes that would form the system, for all of the state emergency facilities and for every governmental unit that's been designated an operational area in one of the state plans, and eventually, each county in the state, so that there would be a secure communications system that would tie us to each of the counties and to units like the City of Los Angeles.

And I think that will — that will reinforce that.

One of the things that we found happened in the Whittier — in the Loma Prieta earthquake was that we did not receive a lot of information initially from cities and counties. It took a period of time. And I think that that's — that it wasn't because of physical damage to the communications system. Some of the problems were the overloading of the system, and then a catastrophic problem, that when CNN gave out our phone number as the number for people across the world to call to find out, you know, whether Aunt Mabel was all right in the Bay Area — and essentially, we went dead in the water. We couldn't — we had almost no communications via telephone as a consequence of the system just being saturated.

But we think that the satellite capability will give us that essential, you know, link. And then, another problem we saw, while there wasn't damage to the microwave system, there was, again, just an overload of the system. We really need to work on kind of radio disciplines — extremely difficult to get the information across on the radio systems that we currently have. And but for the presence of the Goodyear blimp and Al Michaels, you know, there would have been a lot of uncertainty, I think, initially.

Another issue related to that that I might mention, and something we're very interested in continuing to work with the USGS and other groups on, I think initially we tended to underestimate the impact of this earthquake, because of some of the first reports we had about the size of it. And kind of the combination of the initial reports, I think, that it was a 6.2 magnitude earthquake, and the location was fairly accurate, and then the pictures from the blimp, I think initially people weren't quite that it — you know, how bad it was.

And there was — the down side to the media attention that was immediately focused was that I think people tended to see this as the San Francisco earthquake, and it took a while before Watsonville and Hollister and other communities in the far South Bay Area were fully — that we fully understood how serious the situation was there.

COMMISSIONER EBERLE: Yeah. It's still referred to as the San Francisco earthquake in some areas.

I do have another question. One of the things that we kind of noticed down in San Diego was the coordination between the EMS resources and the other types of resources. And it seems to me that we've got two systems. And I'm going to be asking this same question later, but it seems to me that those two functions need to be coordinated at the state level before the requests ever come down to the local government.

The position that we're going to be taking down in San Diego is that EMS can request the resources and get it all set up, but we've got an agreement down there that they won't go until they hear from OES, which we consider as the official channel for requesting resources.

DR. ANDREWS: One of the — I would agree that, you know, we need to, you know, continue in those — work in those areas, and I think, you know, Calvin Freeman later on can comment on this in greater detail, but one of the proposals that is contained in the governor's budget also, I believe, relates to additional resources to the Emergency Medical Services Authority to hire additional staff so that they can work on elaborating the medical mutual aid system throughout the state, so that it comes up to the operational standards and procedures that, for example, the fire services have, not only for application in earthquakes, but also for other mass casualty situations, like the train wreck in Stockton, or the shooting that occurred in Stockton earlier, or last year.

COMMISSIONER EBERLE: Thank you, Dick.

CHAIRMAN CLUFF: Thank you very much, Dick.

DR. ANDREWS: Thanks.

CHAIRMAN CLUFF: We appreciate your coming.

DR. ANDREWS: Thank you. And thanks again for adjusting the agenda. I appreciate it.

CHAIRMAN CLUFF: Thank you.

I have a proposal to the Commission about our lunch. We're having sandwiches, as you know. And I think we could get caught up on the agenda if, when the sandwiches are available, we take a few-minutes' break and pick up our sandwiches, and then immediately come back and continue to work. And we will apologize to the presenters. We're sorry about that, but we can eat while they're giving presentations and we're asking questions.

And so, because of another schedule commitment, we'll take the FEMA agenda, Tom Hamner, next.

And, Teri, what is the status of the sandwiches?

MS. De VRIEND: The sandwiches? They're downstairs.

CHAIRMAN CLUFF: We have to go down and pick them up?

MS. De VRIEND: No. No, they're coming up.

CHAIRMAN CLUFF: Okay. So, she will alert us, and when they're ready, we'll pass them out.

But I think a number of people would take a five-minute break, so —

MR. HAMNER: You want to take that now, before we get started?

CHAIRMAN CLUFF: No, let's go ahead, and we'll — we might interrupt you here.

MR. HAMNER: Okay. Thank you.

I have Viki Doty of my staff here. In case the questions get too hard, why, she's going to back me up.

Thank you for inviting us. I see a couple of people I know around the place.

My topic is lessons learned. The first lesson I learned is: Don't send all your permanent staff and reserve cadre to respond to hurricanes on the East Coast, go on a vacation, and still be in a position to respond instantaneously to an unannounced 7.1 earthquake. You can't do it very well.

Yet, even without prior warning, we — state, local, and federal agencies — were able to open disaster application centers within five days of the president's declaration. The declaration was made in less than 24 hours of the event, a fast event with the president.

FEMA opened a toll-free tele-reservation line to accept applications for disaster assistance the day after the earthquake.

The second lesson I learned was that the Response '89 exercise in Sacramento in August provided a good training vehicle, as well as introducing players from the various federal and state agencies that also interfaced in this response. Emergency responses are always more effective if you are dealing with known quantities.

The Loma Prieta earthquake was a major quake, but even with its destruction and loss of life, it pales in comparison to those predicted along the San Andreas and Hayward Faults.

On the morning of October 18th, I was on one of the first helicopters that flew over San Francisco, south to the Dumbarton Bridge, up through Oakland, along the collapsed Cypress Structure, back to San Francisco looking at the collapsed Bay Bridge, and also looking at the fire in the Marina District.

I was surprised in what I didn't see. There were no signs of collapsed buildings, no debris in the streets. The tilt-up concrete commercial buildings along that entire stretch were still intact. And we'd covered a lot of miles. We said, "This is not the big one." You know, we still didn't know what we had out there. All the — looking at TV during the night, and radio reports, we didn't hear about Santa Cruz until the following day, even after I came back from that helicopter ride.

During that flight, I envisioned the destruction that is forecast based on the Hayward Fault scenario, and I am apprehensive about some of the current timeframes for preparedness planning. Specifically, I think 72 hours, for which the general public is being told that they will have to be self-sufficient, is too optimistic. I believe five to seven days is more realistic, in the San Francisco-Oakland area. This urban area, with vital lifelines of power, water, fuel, transportation in jeopardy, I doubt these lifelines will be operational within 72 hours. And the citizens at large will have to be self-sufficient for a longer period.

The third lesson, and probably the most significant one, is that although we have been planning for earthquake responses since 1971, with the San Fernando earthquake, we — local, state, and federal agencies — as well as private individuals and businesses, must be better prepared in order to effectively cope with the destruction that will result from a catastrophic earthquake.

With current heightened awareness of what adverse impacts an earthquake can inflict upon a community, we should not let this opportunity pass to redouble our efforts to complete catastrophic earthquake preparedness planning. Our combined state and federal efforts to date have resulted in the publishing of three documents: the Plan for a Federal Earthquake — Federal Response to a Catastrophic Earthquake, the Southern California Earthquake Plan, and the draft for the Northern California Earthquake Plan.

These plans outline a structure for responding to a catastrophic event that is based on close working relationships between federal and state counterpart agencies. Local governments request resources and assistance from the state. The state agencies provide assistance and fill those requests. When local and state resources are depleted, state agencies then turn to their counterparts from the federal agencies.

This is different than going through the normal requests from the OES-to-FEMA chain of command if you don't have a catastrophic earthquake.

The federal plan was activated for this earthquake, but the activation was limited to the federal agencies responding to FEMA mission scientists, rather than requests from state counterpart agencies. Therefore, most of the concepts of the plan were not testing.

This was a conscious decision made by our national office when we got the indication that — in fact, after I did the fly-over — that it was not as large as we had thought, that everyone was going to have to be meshed, as we had initially envisioned the catastrophic earthquake response would be.

We at FEMA are currently developing a regional supplement to the federal plan, which will establish specific procedures for a catastrophic event in California. We have conducted joint federal-state earthquake exercises. The most recent were the Response '87 and Response '89.

Response '87 was based on a Southern California scenario, and provided training for state, federal, and local officials, while Response '89 was based on the Hayward scenario, but only provided training for state and federal officials. There were no local officials in that particular scenario.

What else did we learn from our response to the Loma Prieta earthquake, and what changes can be made?

A hazard mitigation team was formed for the Loma Prieta earthquake to evaluate response planning, and hazard mitigation programs, and to recommend ways to reduce loss of life, damage, and injuries in future earthquakes in California. This team consisted of more than 50 individuals, representing 27 regional, state, or federal agencies and utility companies.

I will first discuss the response planning recommendations made by this team.

Number one, improve Bay Area local governments' understanding of procedures for requesting disaster assistance. Local officials made assistance — requests for assistance directly to FEMA and other federal agencies, rather than going through the state Office of Emergency Services. This points out a need for training of local officials in this after-response that we've discussed earlier. It's also something that Dick had talked about in his presentation to you.

He and I are going to be saying some of the same things, so — it depended on who got here first that I'm sure who's going to say — be the duplicate.

We also discovered that although most emergency management staff have received training and know procedures, other local officials, such as county managers and mayors and so forth, may have not. Training must include more than just the local emergency management coordinators.

Two, complete the state response plan for a catastrophic earthquake in the San Francisco region, and incorporate the lessons learned from this response.

Three, develop state disaster intelligence capabilities and systems, by identifying the types of information, level of detail, and timeframes required. Federal damage information capabilities must also be developed. Accurate damage intelligence and information is critical to a timely response by state and federal agencies.

Four, continue with FEMA's 1990 work plan objectives of developing procedures to provide an automatic pre-established response for time-critical elements such as medical and urban search-and-rescue; in addition, completing the regional supplement to the federal plan, stressing notification and deployment procedures; and thirdly, identifying and selecting primary and alternate disaster field offices and staging areas.

The fifth recommendation was, review existing communication systems, identify shortfalls, develop acquisition plans — develop acquisition plans. Adequate communication systems are essential in responding to catastrophic disasters. And I — with everybody having radios, frequency management is going to be a nightmare for the federal communications system, because everybody has their own radio system these days, and the interface of those systems is going to be a critical thing to develop, so that we're all able to talk, but yet not scramble each other's conversations.

Sixth, improve urban search-and-rescue capability, a critical, critical element.

Finally, the hazard mitigation team found that California has significant hazard mitigation programs that contribute to reducing loss of life, property, and injury, but found that additional improvements can be made. Five recommendations from that team are: number one, develop programs and encourage local jurisdictions to relate land use and construction practices to geologic conditions; establish appropriate repair and retrofitting standards that, at a minimum, would meet the 1973 UBC, except that for unreinforced masonry, they should use the 1985 UBC; establish procedures for encouraging retrofitting of existing structures, particularly the strengthening of unreinforced masonry buildings and bracing of cripple walls for wood-frame houses; four, develop, adopt, and implement regulations requiring mobile home bracing systems, including mobile home or manufactured structures which are used for temporary classroom; the last is include seismic strengthening requirements when federal or state redevelopment funds are provided.

We're missing a good opportunity when we are spending state and federal money in rehabbing some areas. It wouldn't take that much more money to put in, while you're doing the rehab, to do some seismic strengthening, but I don't think — I don't think HUD looks at them, and I don't believe HCD and the state, I don't think they have that kind of program, like that. But it is an opportunity.

And I would like to conclude by saying I feel fortunate to have been able to work with the State of California in responding to numerous disasters in the past — maybe too many. You know, we're getting to be old habits. We have developed harmonious relationships, which are reflected in our combined federal-state responses.

Thank you.

CHAIRMAN CLUFF: Thank you very much.

Questions?

Dan?

COMMISSIONER EBERLE: You mentioned about the communications frequency coordination, and you mentioned the FCC there. Do you know of anything that they're doing in that particular area?

MR. HAMNER: No. I do know Ted Randall, who is the coordinator for the communication. He was on my staff for this disaster, and that was one of his primary concerns, is how he or we are going to get a handle on frequency management, with, like I say, so many people operating, you know, these short-distance telephones — I mean radio. But I — unless Viki knows —

COMMISSIONER EBERLE: That's getting to be a big problem, especially in the new frequency range, the 800 megahertz. And certainly, your various manufacturers of equipment, you cannot interface between them, Motorola and RCA, which causes a tremendous problem for the — for the — within the local area, as a matter of fact.

MR. HAMNER: Well, even the — you know, the telephone systems that — the hand-held telephone that used the microwave system to, you know, bounce around in a community, if those microwaves are offset — you know, the dishes, by an earthquake, we're going to have some scrambled — interesting — I think we're really going to have to go to satellite if you're going to have anything that's going to be foolproof at all.

CHAIRMAN CLUFF: Randy?

COMMISSIONER PESTOR: Yeah. I just wanted to mention that Assemblyman Cortese had a bill two years ago on the anchoring of the foundations and the cripple wall reinforcements, and the real estate industry, you know, put on a full-court press to kill that.

I met with them this week, the real estate lobbyists, and they're — it looks like they're going to be coming around and working with us on the bill. The chairman of the Land Use Committee of the California Association of Realtors happens to live in Los Gatos, and supports the idea now. So, it looks like things are going to be really positive on that.

The other issue, on redevelopment areas, Assemblyman Cortese's been making headlines this last week about recommending that statewide, although he's very concerned about the redevelopment area in San Jose, where funds have been used to make certain improvements to buildings, but not necessarily seismic retrofit of the structures.

And I think that on your issue, that restricting it to state and federal funds might be a little bit too limiting, because I think that what we feel is here in California is that there are a number of funding sources in redevelopment areas, including tax increment financing, which would be, you know, the local bonds that may be issued.

So, whether it's local bonds, private resources, state funding, or federal funding, I think Assemblyman Cortese believes that in redevelopment areas, the buildings should be retrofitted, irregardless (sic) of the type of financing that comes in. So — and I would expect that to be — the legislature to look on that positively this year too.

MR. HAMNER: Well, these two, you know, the state and federal, they were so obvious that — why something wasn't being done.

Good recommendations.

CHAIRMAN CLUFF: Jim?

COMMISSIONER McMULLEN: The State of California, through the state Office of Emergency Services and the state fire marshal, have developed Rescue Systems 1 for FEMA, with a FEMA grant, and which has been adopted by FEMA and the EMI. And we stand ready and willing and able to do Rescue Systems 2. And you said there's a need for improved urban search-and-heavy-rescue, and that would be of great benefit to the nation and this state, if that grant were received in an affirmative way.

Do you have an updated information on FEMA is planning to do on that?

MR. HAMNER: On which grant are you —

COMMISSIONER McMULLEN: For developing the curriculum —

MR. HAMNER: Oh, the rescue?

COMMISSIONER McMULLEN: — for Rescue Systems 2, yes.

MR. HAMNER: I do know that FEMA was — I guess the president or OMB authorized $3 million last Friday or something, to FEMA as part of the $250 million that was in the allocation when Congress funded the money for Hugo and for this earthquake. There was $250 million put in the president's discretionary fund.

Now, part of that has been moved to various federal agencies, and FEMA received $3 million of that, but I think it's mostly going to be for planning — and it may be passed down to the state. They're trying to figure out where to put it to the best use.

But as far as the grant, I don't know anything about that.

CHAIRMAN CLUFF: Paul?

COMMISSIONER FRATESSA: First off, I'd like to say, since October 17th I've met more engineers from all over the United States who have come out to help FEMA, and they're — you have a bunch of nice people and very competent people that have come out to help you with what you had to do.

You commented that, in your recommendations, that you were going to use the '73 Uniform Building Code for buildings to be retrofitted, and then you commented that you were going to use the '85 for unreinforced masonry. And I'm not sure where 1985 got in. So, question one, where did it come from?

And question two, very soon, I think within the next six months, there is going to be another standard out that will come through ICBO, for unreinforced masonry. And you should be aware of that in your recommendations.

MR. HAMNER: The 1985 UBC information, we believe, came from the Seismic Safety Commission staff.

COMMISSIONER FRATESSA: Then perhaps I —

MR. HAMNER: If it doesn't exist, I apologize.

COMMISSIONER FRATESSA: We'll chat with them later.

MR. HAMNER: Yeah.

COMMISSIONER FRATESSA: I've got a bigger — I would just alert you to that recommendation, and the — another —

MR. HAMNER: We don't want to make a recommendation on something that doesn't exist.

COMMISSIONER FRATESSA: It exists; it's just I'm not sure why you picked it out.

MR. HAMNER: Maybe the dates are wrong. I don't know.

COMMISSIONER FRATESSA: There was another question that has come up that is very difficult to answer simply, and it may be the need for a policy. A building has been damaged, has seismic damage to it, for some reason. You come in, and FEMA is funding the repair of that building. And to what level does it fund the repair? And the example being, if the building was damaged because it was inadequate in its seismic design, for whatever reasons.

And FEMA, do they fund just enough to bring it back to the condition prior to the earthquake, or do you fund sufficient repairs to bring it up to some level, such as the '73?

MR. HAMNER: Each one of those — you'd really have to look at each one of the buildings to see what kind of damage we're really talking about, because if it's minor damage, and if they, say, just grout it, then it still may be noncompliance. It may be an unreinforced masonry building that you would, you know, have to do a lot of retrofitting. If that same building has sufficient damage so that it is unsafe and needs to be taken down, or you're going to tear it down and rebuild it to current codes and standards, repairs are very hard to deal with, because if you can do the repair — I think UBC says if you've got to do remodeling or repair up to 50 percent of the value, or whatever that is, then you have to bring the whole thing up to current codes and standards.

The question is, what is the standard for seismic requirements at the present time? Is there something in the state that requires — are we now just developing some of these standards? I think that's where we come into some questions.

MS. DOTY: I'd like to answer that.

MR. HAMNER: Yeah. I knew I brought Viki for something.

MS. DOTY: The way we do fund is to the current existing code and standard at the time we provide the funding. What we're finding in this disaster, as well as in the Whittier Narrows, local governments don't have codes that require upgrading in most instances when a building is damaged. Most codes allow repairs to be made without requiring upgrading. If the upgrading is required, we will fund it. But in most instances, the upgrading is not required.

COMMISSIONER FRATESSA: Okay. I'm belaboring the point because it is a matter which is unclear out in the world out there right now, in Northern California. You said "if they will require," do you mean if the local agency will require it, or does require it by ordinance, or it has to be a standard?

MS. DOTY: Yeah. It has to be a written standard that the local agency does have and does enforce, no matter whose money would be used for the repair or work on a facility.

That standard can be adopted, right up to the point where we approve funding.

COMMISSIONER FRATESSA: Okay. But the example that I'm belaboring is if — such as a building which had —or an area which had very light ground-shaking, 10, 12 percent g, which is not much, and it's a nonductile concrete frame, and it shows evidence of damage, or enough that you have to repair that damage, well, clearly, if it was damaged at that low level of shaking, you've got a real potential hazard. To what level, then, does FEMA fund the repair? Patch the cracks? Or do you patch something that — or repair it so it won't — or at least come up the '73 standard?

MS. DOTY: Again, it falls back on what the local jurisdiction requires of themselves, but it normally gets into an engineering review and report that has to then go through the system.

COMMISSIONER FRATESSA: So, it would be —

MS. DOTY: It's very case-by-case.

COMMISSIONER FRATESSA: It would be advisable to — for the Commission, perhaps, to be recommending to local jurisdictions that they have in place such an ordinance, so that then, in the future, it would be more clear to FEMA.

MR. HAMNER: But they want to make sure that they do it with other than just major disaster declarations for federal funds. They're going to have to be doing that for all of their structures, not just a one-time thing. It has to be an adopted standard for all of their facilities, not just federal-funded facilities.

COMMISSIONER FRATESSA: It supports the general philosophy of the code change which identifies potentially hazardous buildings as in need of repair.

I thank you for your response.

CHAIRMAN CLUFF: Keith?

COMMISSIONER UMEMOTO: Are you saying, then, that if a local government had kind of a conditional ordinance, say, in the event of an earthquake, and you have certain structural damage on structure, that for that structure to be upgraded to, say, the '73 UBC code, that wouldn't qualify under the FEMA regulations?

MR. HAMNER: Did you say a code just for earthquake damage?

COMMISSIONER UMEMOTO: Say if the — say if the ordinance had, say, a qualifying condition that in the event of a specified state of emergency, that if there was any structural damage to a structure, that they bring that particular structure — upgrade it to, say, for instance, the '73 UBC code. Would that be a condition that would be —

MR. HAMNER: I'm a little concerned over your qualifier. I don't know if you're saying that, in case there is an emergency —

COMMISSIONER UMEMOTO: No. Well — yes. Say — let's just take an example, that City XYZ passes an ordinance that stipulates that in the event of a stated emergency, that all upgrades to the structures within their jurisdictions that require any public resources be upgraded to, say, the '73 UBC code. Would that be a condition or an ordinance that will qualify on FEMA funds?

MR. HAMNER: I would hate to practice law without a license.

What I'm concerned about, if it's so restrictive that in the day-to-day use of that building, or if something happens to it, they are not required to bring it — you know, you've got some kind of a damage, that you don't have to bring it up to the code that — it looks like you're trying to condition when to bring up a building, rather than when a building damaged, regardless of cause.

And that's what I would say. I don't think you can condition it based upon a particular event. If a building is damaged to a certain extent or whatever degree, then that code has to say you have to implement certain standard — repair standards. Then you wouldn't have a problem.

COMMISSIONER UMEMOTO: So, if it's — so, if it's a condition based upon damage to that structure, that would be a condition that might be acceptable for FEMA funding?

MR. HAMNER: Yeah. Well, if — we would have no recourse. If it's in those standards, that is, the local standard which the locals are doing day-to-day business with, then that's an accepted, in-place standard, and you have — we have no problems with it, I mean, because we're repairing to local current codes and standards.

CHAIRMAN CLUFF: Thank you very much for your presence here today. We appreciate your report.

MR. HAMNER: Okay. Thank you.

CHAIRMAN CLUFF: We're going to take next the medical facilities, emergency medical services, Calvin Freeman.

Welcome to our Commission meeting, and we'd like to hear your report.

MR. FREEMAN: Thank you very much.

I'm Calvin Freeman. I'm chief of Disaster Medical Services for the state's Emergency Medical Services Authority.

And I have to say it's with mixed feelings that I'm here. On the one hand, it's heartening to see the continued building of the bridge between engineering and seismic sciences and medical and health response issues. On the other hand, if we didn't have as many dead and as many injured in the Loma Prieta earthquake, then your entire hearings would probably be dealing with structural issues.

This was the largest event, in terms of its impact on medical and health of Californians, at any event since I've been in California, over the last fourteen years, and certainly since the time of the creation of my department in 1981.

Official death toll at 62; official injury report, 3,208. How those injuries are divided, between serious and minor, is another issue that we'll be looking at in substantial detail as part of post-event epidemiological studies.

Hospitals damaged, the Office of Statewide Health Planning and Development has a complete list of everything that has happened to — that happened to every hospital. Only one hospital, as far as we know, suffered structural damage, and that was Watsonville Community. It remained functioning, essentially, in large part due to the skill and courage of the staff there.

At the time of the event, our staff here in Sacramento felt the earthquake. That is sufficient trigger for us to begin the implementation, at least of the initial parts, of our medical response plan.

We turned our office, which is located just a few blocks from here, into a medical EOC.

For those of you who don't know, the Emergency Medical Services Authority is a small department within the Health and Welfare Agency of the State of California. It's relatively easy for us to take our entire staff and turn them into emergency service workers in the event of an earthquake of this type.

We alerted regional disaster medical health coordinators throughout the state, the Ambulance Association, the Hospital Association, and established, as rapidly as we could, contact with the other departments in state government with which we work.

We had staff at OES within minutes of the — of hearing of the event over the radio.

In addition to OES, we coordinate our planning and response activities with, principally, other departments within the Health and Welfare Agency, notably the Department of Health Services, the Office of Statewide Health Planning and Development, and the Department of Mental Health.

In addition, we have a very close and a very special relationship with the California National Guard. The Guard is one of the few guard units in the country with its own medical brigade. That medical brigade, in time of disaster, is assigned directly to us as our operational arm in mounting a state medical response.

Our initial action, as it was following Whittier Narrows, was to gather information from the impacted counties. From monitoring news reports, we could — we were relatively sure fairly quickly that this was not the catastrophic disaster that we had exercised for in August of '89 with other state and federal agencies. But, given the collapse of the section of the Bay Bridge and the well-documented collapse of the Nimitz, we knew that this was bigger than anything that we had faced — that we had faced before.

We began the process of gathering information from the counties. Within two hours, we had contacted all of the counties within the Bay Area, with the exception of San Francisco and Santa Cruz. Most — those counties reported that they were still gathering information at that time, but that the situation seemed to be under control, that they had not experienced the collapse of hospitals, and that their emergency medical services system was still functioning.

Within four hours, we had established initial contact with San Francisco and with Santa Cruz. Notwithstanding the problems in San Francisco, their local EMS agency reported that their emergency medical — that the emergency medical problems they faced were being handled by their — by their county's resources, with some mutual aid assistance from Marin County.

Yet and still, we activated the 175th Medical Brigade of the National Guard. We obtained permission to use Travis Air Force Base as a staging area, and the National Guard moved an area-backed squadron from its base at Mather Air Force Base, here in Sacramento, to Travis Air Force Base, in the event we needed to assist with the movement of casualties around the Bay Area, around and out of the Bay Area.

The National Guard also put its two field hospitals on alert. They loaded the hardware for their Southern California field hospital into C-130's at Los Alamitos, and they actually moved the staff of the hospital up from Los Al to Travis Air Force Base.

Again, at this point, as we continue to gather information concerning casualties and deaths and the impact on the health delivery system in the affected area, the counties were reporting that the situation was under control.

Now, this is still the night of the earthquake, and notwithstanding these reports, our expectation was — it was a somewhat morbid expectation, that when the sun came up, that we would all see a lot more earthquake impact than we anticipated the night before. And thank goodness we were wrong, that the local — and that the local EMS agencies and local EMS officials had an accurate assessment of the situation.

As part of our overall response plan, in addition to opening the EOC at our offices and dispatching staff to the state operations center at OES, through the Department of Health Services, our partner in the medical response, we established what we call the joint Department of Health Services-

Emergency Medical Services Authority operations center at the twin towers.

And this emergency operations center is principally responsible for the acquisition of medical and health mutual aid from unaffected areas of the state. This operation was up and running full-scale the night of the event, and began surveying unaffected counties of the state for medical personnel, potential medical personnel volunteers, medical supplies and equipment sources, critical incident stress debriefing teams, and public health resources.

By day two, all of the counties, including Santa Cruz, seemed to have completed fairly detailed assessments of the impact, the medical and health impact of the earthquake, and reported the situation under control. At that point, we began to scale down our response. The hospital staff of the — the National Guard hospital staff at Travis returned to Southern California, the area-backed squadron at Travis returned to Mather, and, as luck would have it, that's when Santa Cruz requested medical supplies — a very important lesson that we learned.

Santa Cruz, although the facilities essentially rode out the disaster, Santa Cruz was — access to Santa Cruz was severely restricted. The hospitals and medical facilities there did not have access to their normal sources of medical supplies and equipment, and they turned to us, especially to support operations at the nursing home.

For the first time in California history, as far as we can tell, the state provided an earthquake-impacted county with substantial amounts of medical supplies and equipment — 2,400 pounds, a drop in the bucket compared to what we project for a truly catastrophic event — yet and still, a substantial test of our mutual aid system.

A large part of these supplies were obtained through a private relief organization called Disaster Relief International. The majority of the supplies were actually purchased on the — on the open market and delivered via National Guard helicopters.

One of the — I think one of the innovative things that we came up with last year as we practiced our medical supply acquisition plan was to actually bring private vendors for medical supplies into our EOC. It worked wonders, and saved many hours in acquiring these resources.

During the following week, we also arranged for the acquisition and delivery of public health nurses and primary care physicians and nurses to staff clinics and shelters in Santa Cruz County.

Okay. What did we learn?

On the positive side, as Dick Andrews alluded to, our practice and our planning paid off. I think that, essentially, our system is sound, our concept of operations is sound. We do need more planning. We do need more practice. And there are other needs that I'll get to in a minute.

I would say that especially our system for acquiring medical supplies and equipment was validated.

Furthermore — and again, as Dick Andrews pointed out, this earthquake demonstrated the capabilities of local EMS systems in the Bay Area, in both rural counties and in the more urbanized counties, not to pretend for a minute that any of our systems could survive and function well under the impact of a catastrophic event. These systems were stressed, did expand, at least for the short run, well beyond their day-to-day capacity, to meet the additional challenges of this disaster.

We also found that there was much, much more that we need to do. If the earthquake had been larger, if it had been more damaging or located farther north, I'm not sure that I'd be making a happy report here today. In fact, I'm not even sure I'd have a job.

Our system was — I can't say stretched to the limit — we aren't exactly sure where that limit is — but, we came awful close to it.

We found — it's interesting that it takes an event like this to show us the things that exercises won't. We pinpointed areas where we really need to improve our training and coordination with local officials in affected areas. And this whole issue of damage assessment and reporting is one that is absolutely critical.

We need more reliable communications. And I think, even more important — I mean, we did have telephones that worked most of the time, but even more important than reliable communications, we need to have protocols established for defining the data that needs to be communicated, so that we can make most efficient use of what we do have at our disposal.

We knew going in that we have primary roles for information-gathering and for resource acquisition. What we found out in the midst of this event was that we also had a role that we didn't anticipate, and that was problem-solving for local governments. And that is helping them work their way through a system with which they were not familiar.

In some respects, the EMS Authority is at a pivotal point in human services disaster planning for the state. We do have the largest disaster planning staff among all the agencies in the Health and Welfare Agency. We have been at it probably longer than most of the other agencies, and so we have a good idea of what some of the other departments do and the resources they can provide. And so, in some respects, we acted as a referral agency for the Santa Cruz County Health Department and its local EMS agency.

Dick mentioned the governor's initiative to improve disaster response capabilities in California, and we too are part of that initiative. We will receive close to $400,000 next fiscal year, to grow to $800,000 in subsequent fiscal years, in part to improve our management capability through the addition of staff, communications equipment, and funds for our own training and exercising. But I think, even more important, we're in a position now — we know what needs to be done — we're in a position now with the resources to improve the capabilities of local response elements to meet the needs of emergencies.

The best state system is not going to be instantaneous, with the amount of resources required to meet the medical needs of a catastrophic — created by a catastrophic earthquake. The local EMS and health systems will bear the brunt of the response. We can help them better prepare to meet that.

On the other hand, right now the state has absolutely zero civilian capability to mount a medical response to a major disaster. As part of this initiative, that will change. Although we don't plan on hiring and warehousing physicians and nurses and EMT's to wait for the big one to occur, there are an awful lot of interested medical personnel out there who are looking for leadership, to be organized into possible response teams. We have the resources now to begin to do that.

We can't stockpile the vast amounts of medical supplies and equipment that a catastrophic disaster would incur. Yet and still, we can begin to develop strategies for the almost instantaneous acquisition of critical resources that can be applied within hours.

Throughout my experience, we have set — we have told local communities, "You may be on your own for 72 hours." I think that we're in a position where we can't say that we'll be there two minutes before the earthquake, but I think that we can change that 72 to a 48, or even a 36. I think that we are in a position to create a state response system that can respond in a lifesaving timeframe, as well as providing resources for recovery.

And thanks for the opportunity to address you here today.

VICE CHAIR RIORDAN: Thank you, Mr. Freeman.

And commissioners?

Commissioner Eberle?

COMMISSIONER EBERLE: Thank you.

I hope we don't start saying that we can do it in 48 hours or 36 hours. I'd rather stay at 72 hours for a while.

Cal, I'm going to ask you the same question that I asked Dick earlier, and that was about the — kind of the coordination of the mutual aid requests, down to providing a county. What kind of coordination do you and OES have? I mean, we get a request through the EMS system, and then our normal channel is to — for mutual aid, is to go through the state OES system. It can cause confusion, possible duplication of requests, and coordination problems. Can you address that?

MR. FREEMAN: I'll tell you, Dan, that is one of the issues that we definitely need to work on. And I think part of the problem comes from the differences between the normal state medical mutual aid system and that planned and practiced during exercises dealing with a catastrophic earthquake.

During those exercises, with the large event — and I'll say that that is the medical plan that we operated under, and there was a disconnect, quite frankly — speed is of the essence. And in order to maximize the speed with which resources are acquired, we deal directly with our counterparts in the impacted area and with our counterparts in the unaffected area. Where we try to close the loop is in making sure that state OES and asking our counterparts in unaffected areas to make sure that their county OES is informed of what we're doing.

Now, with the resources that we request, that we requested, we're on the hook for. With — well, let me back up. There are a couple of different ways. With the resources requested directly as a result of requests from the local communities, they indicated a commitment to pay for and then to seek reimbursement through the state. With the medical supplies that we acquired on the open market, the Department of Health Services will have to go back to OES, actually retroactively for the mission number, to try to get Department of Finance reimbursement for that.

This is one of those areas that — where the problem hasn't come up in an exercise, did come up in an actual response, and will be on our interdepartmental after-action agenda.

Your county is not the only county that was, you might say, disturbed about the path that mutual aid requests took. In some respects — and I have to take personal responsibility for this — I made a decision that it would be easier for those of us in the emergency preparedness business to improvise than it would for some of the folks in the counties, who were, frankly, grappling with — reaching for resources whatever way they could, and, in effect, actually went out and created separate mutual aid channels that even we didn't know about.

COMMISSIONER EBERLE: Okay. Thanks, Cal.

CHAIRMAN CLUFF: Pat, you had a question?

COMMISSIONER SNYDER: No.

CHAIRMAN CLUFF: Oh.

Jim?

COMMISSIONER McMULLEN: Calvin, I want to support what Commissioner Eberle said. I don't think we're ready to jump down from 72 hours yet on our ability to respond, so —

MR. FREEMAN: Oh, I agree. I agree.

COMMISSIONER McMULLEN: And I think it's — it wouldn't have taken much bigger than Loma Prieta than, certainly, the fire services would have been beyond much more response capability.

But the thing I'd like to bring up is, when you established your emergency operations centerhere in Sacramento, did you use the incident command system?

MR. FREEMAN: Within our — within our office?

COMMISSIONER McMULLEN: Um-hmm.

MR. FREEMAN: No. We used — okay. In our catastrophic plan, one of — one of the — one of the operations that we plan on establishing is called the unified medical operations center. And that operations center involves co-locating our director and staff with the 175th — with the headquarters staff of the 175th Medical Brigade, the California National Guard.

Our operational structure follows their operational structure. We find it consistent with the ICS. We find that it embodies many of the principles with the ICS, but admittedly, it is not identical to the ICS.

COMMISSIONER McMULLEN: I agree. The GEOC, which is under a mandate from the governor for all state departments that are in emergency responses to convert to ICS did exclude the military department, because they have to — the Cal Guard has to go along with what the U.S. Army does, and it's similar and close enough.

But, for the record, the incident command system, on all the other departments that used it, it worked — it worked extremely well, and I highly recommend the system.

MR. FREEMAN: One of the — one of our principal initiatives under the project that the governor has provided us is to improve — increase the level of private-sector ambulance participation in ICS. We want to get training out to them. More and more, they're going to find themselves in joint responses with fire and law enforcement services, and they need to know the ballgame.

COMMISSIONER BOLT: Mr. Chairman?

CHAIRMAN CLUFF: Thank you very much.

COMMISSIONER BOLT: Just one question.

CHAIRMAN CLUFF: Oh, yeah.

COMMISSIONER BOLT: I should know more about your authority than I do. Would you say that earthquake — a catastrophic earthquake would be the largest disaster that you would have to deal with?

MR. FREEMAN: Correct. Our department was created in 1981.

COMMISSIONER BOLT: What's the next one, the next disaster that you would — that would give you a very broad responsibility?

MR. FREEMAN: Well, it's important to keep in mind that our response is in support of local responders, and at the request of local government. California has not had, at least since the creation of our department, a disaster where local government, local medical response, required state assistance.

COMMISSIONER BOLT: Okay.

MR. FREEMAN: Thank you again.

CHAIRMAN CLUFF: Thank you very much.

Let's take a five-minute break, and then we'll — Pat Campbell will be — the State Architect's Office, will be the next speaker.

(Thereupon, a short recess was taken.)

—oOo—AFTERNOON SESSION
—oOo—

CHAIRMAN CLUFF: We are going to continue through lunch.

MR. CAMPBELL: Ready to go?

CHAIRMAN CLUFF: Yes.

MR. CAMPBELL: Well, thank you for the opportunity to inform you of the activities of the Office of the State Architect after the recent earthquake.

The staff of the Structural Safety Section office in San Francisco went through the earthquake and suffered severe shaking in their building, which is located south of Market and south of Mission in San Francisco. The staff and the building both survived, but we're going to move to a modern, high-rise building in the very near future, and a much safer building.

On that occasion, October 17th, in that building we were in, the occupants were thrown from side wall to side wall in the corridor. The shaking was that severe. Our filing cabinets were overturned, there was a lot of ceiling damage, and five of our engineers and one of our clerical staff spent the night there because they live in the East Bay and couldn't get home. They had no lights, no heat, and no food, except some ice cream that someone had given them because the power was out and the ice cream was going to melt anyway, so they gave it away.

It was an experience — most of them have been through earthquakes, but this one was the most unnerving event that they'd ever experienced.

COMMISSIONER BOLT: The building didn't come up to the Field Act?

MR. CAMPBELL: No. That's why we're moving.

Following the October 17th earthquake, OSA assigned 32 structural engineers for rapid damage evaluation of 162 school sites and 17 hospital sites. 89 school buildings were assessed for use as possible community shelters.

In the six counties of San Francisco, San Mateo, Santa Clara, Santa Cruz, San Benito, and Alameda, the student enrollment, in kindergarten through community college, exceeds 900,000, of which 600,000 are in K through 12. In these areas, the OSA-certified-buildings performed quite well.

Nonstructural damage and content shifting were the cause of most of the repair and replacement costs that school districts have experienced since the earthquake. Typical structural damage was limited to minor cracks, which would be anticipated in an earthquake of this magnitude.

OSA based our decisions on where to send our structural engineers on phone conversations with the school districts and with the county superintendents of schools.

I should note that the Santa Cruz County Superintendent of Schools was very well organized and was of great assistance to us in sending us to those schools that needed us the most.

We also, when we couldn't contact various school districts, sent our engineers to those areas where the media reports said the most damage had occurred. And these were the areas where our structural evaluations were most needed. We were able to evaluate in a timely manner all school buildings for which requests were received.

We are now actively working with BAREPP, and hope soon to be working with SCEPP, in publicizing OSA post-earthquake programs for schools, and to make school districts more aware of the procedures, so that they can have more timely damage evaluation and safety assessments of school buildings in the event of a catastrophic event.

As I stated earlier, public school buildings performed well. Some suffered only minor repairable structural damage. Greater damage was experienced at the following sites.

John O'Connell High School in San Francisco: This is a concrete frame and shear wall building. It was formerly an auto manufacturing facility, constructed in the 1920's, and upgraded in 1947. This building suffered serious cracking in the beams and walls.

In the San Francisco Unified School District, the central district office building was damaged. This is a pre-Field-Act building that was never brought up to Field Act standards. Again, it suffered serious damage.

Mountain Elementary in Soquel, a non-OSA-certified — non-OSA-certified, relocatable building, rocked off its foundations.

Loma Prieta Elementary School, which I have up on the screen, one of the buildings, the damage there was due to earth movement, ground heaving, and fissures in the earth, and cracking in the slab on grade.

John Swett Elementary School in San Francisco was closed due to the potential collapse of a damaged freeway structure.

There have been published reports from other agencies and departments of school closures and building damage that are not consistent with the information obtained from the OSA structural engineers' on-site surveys of the earthquake damage. OSA structural engineers concentrated their efforts on the assessment of structural damage, nonstructural damage, and content displacement. Other reports that have been in the media may have considered other factors, such as the release of asbestos and ground fracture.

The handout which I've passed out to you is the latest information we have concerning damage to school facilities due to the Loma Prieta earthquake.

In passing, I should say that the pre-Field-Act buildings that were retrofitted in the period 1933 to 1960 remain the most likely buildings to suffer structural damage in severe earthquakes. The upgrading of these buildings obviously was done to structural standards which were different, and often less, than those which we would require today. Each earthquake provides additional data on which code requirements can be improved and design procedures changed to prevent the damage — the types of damage that occurred in that earthquake.

Fortunately, the Loma Prieta earthquake occurred after normal school classroom hours. Hazards from unbraced and unanchored nonstructural items were evident in many buildings. Pendant-mounted light fixtures without safety cables, suspended acoustical ceilings installed without bracing or perimeter wires, along with the light fixtures that they carried, unanchored four-drawer file cabinets, which, unfortunately, our office experienced in San Francisco, and unanchored shelving pose significant hazards and are a danger to the classroom occupants during an earthquake.

The night of October 17th, 1989, and in the days immediately following, many of our San Francisco area office engineers performed seismic safety assessments of state-owned office buildings. The Structural Safety Section of the Office of the State Architect is, by statute, the state agency designed to supervise the design and construction of public school buildings, state-owned essential services buildings, and the structural systems of major hospital facilities.

After a seismic event such as Loma Prieta, our engineers were also assigned to assess damage in state-owned office buildings, so that the employees, the state employees, could re-enter the buildings — or not re-enter them, for that matter — with a reasonable safety — with reasonable knowledge of the safety of the building, and they could resume their services to the public.

As chief structural engineer for OSA, I also have another position as president of the Structural Engineers Association of California, and I have made some recommendations to OES concerning the use of structural engineers after an earthquake.

And primarily, my recommendation is that the most efficient use of these specially-trained and experienced engineers is to do rapid evaluation assessments, damage evaluations, to discover potential immediate collapse hazards and damage which might cause collapse in an aftershock, and also to, later on, do more detailed evaluations of potentially hazardous damaged buildings which might require repair or removal.

Such tasks as cost estimates of damage clean-up, or repair or rehabilitation of buildings, for the purpose of recovering state or federal disaster relief funds, should not be assigned to these structural engineers. This function is more efficiently — is more efficiently handled by contract estimators, contractors, or civil engineers, whose work includes the cost estimates of materials and equipment.

I have a few slides. After lunch you can sleep through the slides, but I'll run through them very rapidly and show you what has occurred on school campuses and nearby buildings to school campuses as a result of the Loma Prieta earthquake.

(The following remarks were accompanied by a slide presentation.)

MR. CAMPBELL: We'll start with ten slides of the Loma Prieta Elementary School.

This school was built and opened before there was a requirement for geologic hazard studies. And for over a year and a half now, we've been working with the school district and the Office of Local Assistance to have this school site abandoned and moved to another site because the geologic hazard studies indicated that there were, I think, at least a dozen faults running through that site, and many of them under the buildings.

That's one of the buildings. It doesn't show very well. This is a building that was damaged. And if you look down the eave of the corridor roof, you can see it. It's not straight. And that's where the ground-heaving occurred, where the fracture occurred, and where these two classrooms — the only two classrooms on the site — were considered unusable.

The orange door is the area that we're going to look at. And again, you can't see too well, but there is a hump there by that orange door, and the door and the window next to it are not level, as they were before the earthquake.

We get a closer view. There is, again, the out-of-level condition of the door. And the door wouldn't open, and there is a crack running across the slab. I'm sorry we can't see all of the damage.

There's part of the cracking that follow the construction joints.

And there — this is damage in another building. It's plaster damage at the bottom of a window. Even though this site was near the epicenter of the earthquake and suffered severe shaking, the buildings came through very well. The damage to the building itself was due to the action of the earth in heaving underneath it.

That's an inside, interior shot, and that's a cabinet, and the condition of the floor, where you can see the differential movement of the slab.

This is a building — this crack occurred between two fault traces that we had located in the geologic hazard study that was done.

And this is the cracking outside of the building. You can see it propagate across the slab, and then up to the building through that curve, and then to the corner of the window. And again, that's superficial damage, as you'll see in the next — they don't always work — slide. It's plaster damage, not significant structurally.

This is at the C. T. English Elementary School, across the road from Loma Prieta. This is a seismic separation joint, and part of the covered passage here moved one direction, the other moved the other direction and pulled out the bolts. They were over — originally over there, where you see the outline of the washer.

This is at the Radcliffe Elementary School in Watsonville. This is a chimney. It is the only damage that was suffered at the school, and it appears that that is a nonstructural and nonreinforced masonry chimney.

This is thrown in for comparison. This is an apartment complex across the street from Radcliffe School, and those are cardboard canopies supported on thin-steel-type problems.

There's another building across the way that had — an older building, a two-story wood building, that was completely destroyed.

This is Lexington — Lexington Elementary School, in the same area, same school district, and it is a modern building, and suffered no damage.

This is the Marina District in San Francisco, a weak story. We do have some earlier designed buildings that have this same characteristic, and in a future earthquake, some schools may suffer similar damage.

This is Watsonville High School, a two-story concrete building, constructed around 1917, and retrofitted in 1965, 1967. It suffered minor structural damage and some more extensive nonstructural damage.

Two of the Structural Safety Section engineers were in the attic looking at the condition of the building, which has a steel, horizontal truss, I understand, in that attic space, bracing the top floor, when an aftershock occurred. So, they got to watch a real horizontal truss working in an earthquake. I think it scared them a little bit, but it survived very well, and, again, there was not that kind of structural damage that you might expect.

But in the back of that campus — this is the agricultural building — damage to an end wall.

I don't know what I'm doing. Did we go too far?

Well, he — I didn't prepare these, so I'm not sure why he left this one out. Maybe we'll find it later.

This is at Aptos High School. It's a water tank which is out of plumb due to the earthquake and is leaking, as you can see, at the base.

I'm not getting — this is an OSA-certified relocatable classroom building at Hollister Elementary School. It suffered no damage.

And while we're doing that, I'm going to show you some — oh — non-OSA-certified trailer-type buildings.

This one happens to be at the Mountain Elementary School in Soquel. It moved 16 inches off its foundations. These are leased buildings, not subject to OSA approval.

That's another shot of the same building. This is a play area in between those — that building, and we'll show you an OSA-certified building on the other side of the sandbox. And you can see the other building, across there.

The contents in both buildings were thrown around quite a bit, but this building here was not damaged at all, so that's a — this is another trailer-type building. And if you look down at the center of the picture, there is a steel jack stand that's over, and that was a potential hazard.

These buildings won't cause anybody to get killed, unless they're underneath them, but they certainly are a potential for injury to anyone in the inside when they go off these jacks. They are not anchored. They are not braced.

Oh. This is back at Watsonville High School. That's what I was looking at before. This is window wall damage on the south side. This is typical of very flexible steel buildings.

And this is the other side. This is the north side, with taller windows and more extensive damage.

The structure came through fine. It's like Coalinga Junior High School, where the structure was fine, but not still enough to prevent nonstructural damage such as this.

This is — it looks like our office in San Francisco — Boulder Creek Elementary School.

Another view of window wall damage. Let's see —

Oh, this is C. T. English School — I'm sorry — in Loma Prieta School District. As you can see, the four-drawer cabinets are over, and generally, drawers come out, tip over, and they can be heavy enough to cause injury to people who are sitting there at the desk.

That's another file cabinet that came over. This was one, two, three, four — four-drawer again. You'll note that that file cabinet fell over and blocked the exit from the room, which could be a serious problem should any kind of fire or other hazard develop in the building, a difficult time getting out of there.

That's another in the same school, Boulder Creek, that fell over on a desk.

This is at Cabrillo College, Cabrillo Community College in Santa Cruz. All of the books are off the shelf and on the floor. The shelves are off the — out of the cabinet.

This is something that we look at in new school buildings, but don't look — do not have any retrofit requirements for existing schools, or any control over what goes on after we leave. So, these types of things are occurring in every earthquake.

This is a, quote, "anchored" bookshelf. This, again, is Santa Cruz Garden Elementary School. They tried, but gyp board isn't a good anchor, with an expansion bolt. It didn't work. It didn't fall over, but there's no reason why it shouldn't have. And this is the type of thing — we've got to get them to anchor those into a structural member.

This is Cabrillo Community College, where — this is a storage rack. You can see there is some restraint on them. Where it was restrained, they stayed up. It wasn't too badly done.

Here are record files on the top of a cabinet, restrained. They stayed in place.

Pendant light fixtures, the ones — none of them had restraints. The ones on the end fell — again, no safety wires. Generally, the only thing that holds them up are the electrical wiring.

Books, partially restrained on the shelves.

This is at Cabrillo College. This is at the football stadium. It doesn't — you can't tell that about half of the light fixtures are gone, and the next photo will show you where they ended up.

Again, that can be a hazard to anybody that happened to be walking by there.

This is at Cabrillo College. It's indicative of the type of ceiling — suspended ceiling damage that occurred. Normally we get damage at the perimeter, or we get damage with falling light fixtures or air conditioning grilles. These were installed prior to the time OSA had the bracing and perimeter wire anchorage requirements.

Again, at Cabrillo College, more ceiling damage. There's something that goes along with ceiling damage in the older school buildings, is that once you open that area up above the ceiling, you often release asbestos particles, if it exists in the attic space, into the classroom environment, and then you have to go through a lot of expensive testing and removal of that asbestos.

You can see these in this room. This is a radiator. It wasn't in use, but it — this happened also in the Morgan Hill earthquake, where, if you look at the lower lefthand corner, you can see where the toe nails, four toe nails, came out of the wall.

And those are not spectacular pictures, but they are very indicative of the type of damage that occurred in schools in the Loma Prieta earthquake.

Thank you.

CHAIRMAN CLUFF: Thank you very much, Pat.

We'll take a couple minutes for a few questions, if there are any.

Pat?

COMMISSIONER SNYDER: I was in Watsonville for about a week after the earthquake, and I wonder how long it took to complete the assessment or the evaluation of the damage to that high school, because it could not be utilized as a shelter, and we were critically looking for shelter space.

I don't know if there's any way to expedite some of those inspections, or if that was a particularly difficult building to inspect, or what the answer might be.

MR. CAMPBELL: Well, we have a communications problem with the school districts, and we're going to — we're working on trying to improve that.

What we would like the school districts to do, the county superintendent or district superintendent is to, if they need an evaluation of a school building for damage and for use as a shelter, to call our office — now, I know they couldn't get into Watsonville and San Francisco, and maybe that's where they tried and couldn't get through — to Sacramento, and we can send someone down there. If we can get to the area, we'd send them down there immediately.

We did send them there, but we went to the district — county superintendent of schools, and he said, "Well, we need you here first," so we went on their priorities.

COMMISSIONER SNYDER: They had to request you to come in, or what is the —

MR. CAMPBELL: Well, we — if they request us, we'll go immediately, but we went down anyway, and said, "Here, we're here; what can we do for you?" But unless we know that they need us specifically, we'll go to someone who can prioritize where we go.

But we do need to get the school districts to do a little bit more in contact to us.

CHAIRMAN CLUFF: Further questions? Will?

COMMISSIONER PEAK: I may have missed something, Pat, in trying to surround this sandwich while you were talking. But the first school that you showed slides of —

MR. CAMPBELL: Loma Prieta?

COMMISSIONER PEAK: — Loma Prieta School, you were negotiating with the district at that time, before the earthquake, to remove the school or have it placed elsewhere?

MR. CAMPBELL: They were actively seeking a site for a new school, and they were actively seeking funding for moving the — moving out of that school and building on a different site.

COMMISSIONER PEAK: And what's the disposition of that now?

MR. CAMPBELL: I'm not sure. I know that the Office of Local Assistance has concurred with the need to move, and I don't know where the funding is on that. But they are in the process of finding another place.

COMMISSIONER PEAK: They're still — they're still using it, as far as you know?

MR. CAMPBELL: At the last time I had contact with them, they had moved the — were not using that site, no.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: Pat, I know your responsibilities in terms of schools, or public schools, and I'm wondering if you've able to pick up, from informal sources or however, but also information on performance of private schools. And if so, what could you tell us in kind of overview or summary?

MR. CAMPBELL: Unfortunately, I was restrained from getting out to the earthquake-damaged area. I stayed here in Sacramento to coordinate our structural engineers' work in the field.

I think Paul Fratessa could probably give you a better assessment than I on the private schools. And here he comes now.

(Laughter)

COMMISSIONER SCOTT: Pat, would you repeat that question for Paul, please?

MR. CAMPBELL: Okay, because he has the report from the Northern Association.

COMMISSIONER SCOTT: I just inquired as to what kind of information he might have on private schools, realizing that his responsibility is for public schools. And he said you would be the best source.

MR. CAMPBELL: A better source than I.

COMMISSIONER FRATESSA: Thanks, Pat.

MR. CAMPBELL: Well, to answer your question, Stan, no, I don't know anything about it.

CHAIRMAN CLUFF: Bill?

COMMISSIONER IWAN: You referred on several occasions to the contents of the buildings being shaken around, and I guess that's the experience I've had, to see how that can cause injury as well. And I think, again, we were very fortunate there weren't classrooms full of kids in all cases.

What jurisdiction or what means does your office have to deal with that part of the problem? You've got some good authority in the area of the structural reliability and safety of the building. What about the contents? Should there, for example, be some extension of the jurisdiction of your agency over what happens to the contents? Is that a problem, and how could it be addressed?

MR. CAMPBELL: Well, I think it is a problem, yes, and it should be addressed.

We instituted a program two years ago to educate school districts on how to mitigate nonstructural hazards, both equipment and contents. The response has been negligible, and I attribute it to the feeling that if they don't know about it, they don't have to do anything about it, because they don't have the money to take care of it.

But our program was set up to show the school districts how they can, very inexpensively, take care of some of these hazards, such as anchorage of the bookshelves, anchorage of water heaters and acetylene and oxygen tanks and things like that.

And we've been prepared, all this time, to go down to any school district that requested it and show them what they can do, with their students, with their faculty, with their custodians, and with the help of parent organizations.

I don't know how we would approach it — maybe legislatively mandate that they do this.

COMMISSIONER IWAN: But you believe it is a problem.

MR. CAMPBELL: It certainly is a problem.

COMMISSIONER IWAN: Thank you.

CHAIRMAN CLUFF: Thank you very much, Pat. We appreciate your coming.

We need to move along as quickly as possible, so I'd like to ask the future speakers to try to be as brief, but make sure that we get all the important things in the record.

Department of Transportation, CalTrans, Brian Maroney.

Sorry we're late, and thank you for your patience.

MR. MARONEY: I'd like to real briefly verbally make some notes and comments on what we've experienced in the Department of Transportation in the last few months, and then I'd like to show you a number of slides. I tried to keep it down to about a dozen, respecting both your time and mine.

Basically, just to reiterate, the Loma Prieta earthquake was about a 7.1 magnitude earthquake, and it shook regions, basically, from San Francisco down to approximately the Monterey Bay area, and damage was extensive. But mostly, it was localized in specific areas. The entire region wasn't — did not suffer widespread damage.

Words like "devastation" have been associated with towns like Watsonville and Santa Cruz, parts of San Francisco, and more specifically, the Marina District and South Mission District, and even parts of Oakland suffered major damage. Total losses — we've seen estimates that total about $8 million, and we're estimating right now about $1.8 million worth of damage to the transportation system.

Just to highlight some of those locations or places where we had some damage, Highway 17 was closed from Summit Road to Granite Creek Road, due to a landslide; Highway 25 was closed from Highway 101 to about 15 miles south of Hollister, due to the rock slides; and Highway 129 was closed near Ramos Road.

Getting more specifically to bridges, which is where my area of expertise lies, more than — about 3,000 bridges were affected. Okay. It's arbitrary where you draw the lines of region, but it's reasonable to say about 3,000, and about half of those were locals, cities and counties, and the other half were state, are on the state interstate system.

Local bridge damage was generally confined to the Santa Cruz area. On the state highway system, about 65 bridges suffered minor damage. And that definition of "minor damage" is — depends who you ask. I'm using the definition here of repairs that can be made by normal bridge maintenance type crews. And we saw about 25 bridges that suffered major damage. And again, the definition of "major damage," plus or minus — I'm using the definition where we require some type of falsework, okay, in the repair process.

Initially, 12 bridges were closed, okay, to do an evaluation by a maintenance bridge engineer. These bridges were the San Mateo-Hayward Bridge; the Route 92-101 interchange connector ramp; San Francisco-Oakland Bay Bridge; East Bay Distribution Structure, which is the distribution structure just east of the toll plaza; Mora Drive on I-280 in Palo Alto; West Grand Avenue viaduct; Struve Slough, which is just a couple of miles north of Watsonville; and then the double-decker viaducts in the Bay Area, which would include Cypress, Embarcadero, Terminal, Central, and Southern.

The San Mateo Bridge was opened by ten o'clock the night of the earthquake, Tuesday night. Route 92 was opened in a couple of weeks; the Oakland Bay Bridge, in four weeks; Mora Drive — excuse me — West Grand Avenue was opened somewhere in mid-December; and Struve Slough, the plans were completed less than one month after the earthquake. Construction is now in progress, but the exact date can't be given to you right now. It hasn't been completed.

Most bridge damage occurred to structures designed before the 1971 San Fernando Valley earthquake. That's when the Bridge Design Department in California — California upgraded the seismic design specifications, and that's an upgrade beyond ASHTO levels at the time. At that time, it was about 6 percent g lateral force through the superstructure, and California went beyond that at that time.

Seismic retrofit programs have been underway since then. And the first steps were a $55-million effort to modify the structures at the superstructure level. And that effort was basically to tie the superstructures together, force them to act more as a unit, to prevent drop-type failures that were experienced in some of the structures in the San Fernando Valley earthquake. This work was performed on something like 1,200 structures throughout the state, and it was completed just a few years ago.

And in '71, we learned that there were some substructure problems too, some retrofit — retrofitting was needed, and it was documented, but the problem was not successful in competing with state funds until just after the 1987 Whittier earthquake. Right after that, CalTrans received $64 million, or at least a promise for $64 million, and this work, retrofitting of the substructures, was actually underway, and some of the plans had actually been completed when the Loma Prieta earthquake occurred.

The California Legislature has appropriated funds for research and retrofitting all the city, county, and state bridges, on an accelerated schedule, since that earthquake. So, we are starting to receive more funds, and already, some of the research has started. And research, you always want to do that parallel with work. You don't want to go too far without documenting or verifying your work.

UC San Diego has had an ongoing, for the last couple years, column retrofit — single-column retrofit research program. We've been monitoring that for a year, and using the information that we've been getting out of their laboratories almost instantly, sometimes within a week after it's up. And that's going to be continued on to multi-column vents and outriggers. They retrofit behavior after they're modified.

UC Berkeley, already a full-scale test is underway at Cypress. The testing is actually done, and the data is being analyzed right now.

Berkeley has also received a — received a grant to do a comprehensive nonlinear dynamic analysis on the Bay Bridge, for earthquakes of magnitude — something like 8.3. And the Bay Bridge is a unique-type structure, but there are other structures, lifeline structures, that have similar components — the steel crossings of the Bay Bridge, like the Richmond — that you can apply some of the things you learn from the behavior and the lessons you can extract from the Bay Bridge research.

Okay. So, we're moving forward on the research. And those are the immediate actions in the research area. We also are investigating others.

I was requested to bring with me some possible comments that I could throw out, or requests that — what you can possibly do to help us, and I've gotten a couple of them.

If it's possible for you to set up — or enhance the communications between bodies of the legislature and CalTrans, if you will, to discuss and possibly refine and massage Bill SB 36x, which has dates, goals, and sets some funding on some of the retrofit efforts.

And the bill uses words like "state-of-the-art" and has dates, and those, in some cases, are — can be accomplished, but within the restraints of the system that has been set up, like General Services, and people who watch over the state — and it's good that we make sure everything's fair — things like fair bidding, we have to put things out to bid. If we're going to use state-of-the-art technology and that kind of thing, we need to have more of an open hand to go get that, and do it quickly, to meet the dates that have been written down in SB 36x.

If we still want to hold tight with sending things out for bid and going through that typical kind of process, we need to go back and have some input, and maybe massage some of the goals of that bill.

Also, the balance of risk versus cost, we believe that that's something one or two people shouldn't really do. We think that's something California citizens, as a society, should approach. And engineers will definitely have input to that, but I think every other facet of the population should have input to that too.

Now, if I can, I'd like to be able to present to you just a few very of the things that I saw when I was out, out in the field.

May I have some assistance? Is there someone out there?

(The following remarks were accompanied by a slide presentation.)

MR. MARONEY: Okay. This is a first shot. Basically, it's the State of California, and in a region that could be defined to be the affected area.

Okay. You see many dots here. They're actually little "x's" and "o's" — and the refinement's not there for you to distinguish it, but basically, there are a lot of bridges there, city and county, that were shaken.

Okay. When you look near the San Francisco-Oakland area, then you see some pink stars. Okay. Those are the structures that suffered major damage.

Okay. In general, you can extract out of this slide that there were not a lot of structures that saw major damage, when you consider all the structures that saw major ground motion.

Okay. This is a typical shot of what we saw at Cypress. Basically, the superstructure, the above superstructure, came almost straight down. There was some lateral displacement as it came down, and it's probably due to the lateral motion that it saw. We have eyewitnesses that have discussed the lateral motion, and analysis, mathematical modeling, et cetera, also verify that, so we're pretty confident that we understand the behavior of this structure.

Typically, you see some of the columns from the second level laying diagonally, leaning up against the lower columns, a classical kind of 45-degree shear below it. This is typically what was seen.

Can we have the next slide, please?

Okay. If you look at the structure type, if you will, slice the superstructure in half and look north and south, you'll see three different types of bent types. Without becoming too technical, each of these bent types will behave different characteristically. There were a number of pin joints in the superstructure that was — that were typical of this vintage type of structure. And those pins have attracted a lot of attention. The thing is, they, at this time, appear to be a weak link.

Can we have the next slide, please?

If you do an evaluation on the structure, or impose a simple, inverted stress distribution, similar to what you might do with the UBC, and you increment that distribution based on ground accelerations that you might see or base shear, you can evaluate the ground acceleration that might cause the structure to fail.

And if you do this on the Cypress structure, and you do it for all of the bent types, you find out that basically, with this kind of analysis, that this structure was almost designed to twice the capacity of the code at that time.

Okay. At that time, you have to remember that no bridge had ever fallen down in the State of California due to an earthquake, and the attitude was, you know, "Why design for something that doesn't cause a problem?" They designed for it, and they overdesigned for it.

More detailed analysis that are recently performed, using, if you will, state-of-the-art technology, show that the superstructure actually even had more capacity, and numbers like three times or four times the capacity are actually there, that were required by the bridge design specifications at the time.

Can we have the next slide, please?

Okay. Lessons that were learned at Cypress.

Unconfined shear keys, okay, of this vintage are a problem.

Okay. Flexible structures on flexible soils, variable soil conditions along the length of the structure, and variations in lateral stiffnesses. Okay. These are the basic lessons.

Next slide, please.

Okay. If we approach the Bay Bridge, this is a plan view, a view that you might see, if you will, from an airplane.

The region on the right side — there are the islands in the center, and to the right side is Oakland — okay, that's the region we're going to zoom in on. And right at the kink in geometry is where the problem or the damage occurred.

Next slide, please.

Okay. Basically, the left side of this is the through truss, the part of the bridge, when you drive through, you see a lot of metal structure on the top and all around you when you're on the top deck, and the right side is the deck truss, where you don't see anything on the side of you or on top of you, if you're driving on the top level.

Simply stated, at Pier E9, where the damage, the major damage, occurred, both of these structures are pinned to Pier E9, which is the yellow-colored member on the slide. They're pinned where the connections of the green area and the yellow area come together, and the white area and the yellow come together.

And in any kind of earthquake, any kind of thermal expansion, wind bloat, et cetera, no matter how the structure moves around, as long as the through truss is connected to the tower and the deck truss is connected to the tower, even if they move, the dimension between the two trusses are always going to stay the same.

Okay. And because of that, you can put a simple span, spanning in between the two truss systems across the tower span, and those are about 50 feet. And those are the red members.

On the right side, there's a pin support, and on the left side there's a roller support. And basically, what happened when the earthquake hit, the east side of the structure moved east, maximum approximately 14 inches, final displacement about 5 to 7 inches, and the left side stayed with the tower.

Okay. And the right — on the right, on the bottom, where the — you have the deck truss connected to the tower, it sheared off.

Okay. So, the right side, or the east side, moved away from the tower, which made the span in between the two deck systems grow to be greater than 50 feet. That's how the simple spans came down.

Next slide, please.

Okay. That's another view of it, to help understand. The right side is the deck truss, and the left side is the through truss. The right side moved away, because it was no longer connected to the right side of the yellow tower. And when it came down, the left side literally just fell off the rollers.

Next slide, please.

Okay. If we zoom in on that pin connection, you see, on the left side, you see some — a schematic or an illustration of the bolts connecting the truss through the shoe system. On the right side, you see basically how it failed, moving right.

Okay. The bolts that have replaced these are about twice as strong, so we're enhancing the capacity of the structure. However, the basic strategy of the structure when it's overloaded has not been — has not been damaged, because the system is going to remain the same. This is still a fuse for the whole structure.

Next slide, please.

Okay. This is a shot of what that pin connection really looks like. Schematic illustrations are always somewhat deceptive. Here you can see actually where some of the bolts have move.

Next slide, please.

This is a shot to help you turn the illustrations into reality. These are the 50 — approximately 50-foot sections that span the tower, the tower span. Here I always like to compliment the contractor. My experience, out in construction, any contractor that does something once does a good job and makes a good profit. This contractor did things once. A good pat on the back.

Next slide, please.

This is a shot of Struve Slough, which is just a couple miles north of Watsonville. You see a white dot to the right of the structure. That's a hardhat of a CalTrans engineer. He's standing in a riverbed. I weigh about 170 pounds. As I walked out on that riverbed, I sunk about 2 inches. It's very, very flexible soil, and it goes down a long way. Right now, I believe the ground motions in this riverbed were extreme.

Next slide, please.

This illustrates some of the displacement you saw below the superstructure. What you're looking at is the top of the column and where it's connected into the superstructure at the bent. This is an approximately 1960's bridge, designed before ductility became part of CalTrans' modern design specifications.

Next slide, please. This is what it looked like where the pile extensions, or roughly, if you will, the columns, go into the ground. This is not the largest soil deformation that I saw at the site. This is evidence that the ground was moving a great deal.

I talked to a geologist who was just a couple hundred yards away from the structure, actually in the riverbed soil, and he told me during the earthquake, he could not stand up. This region was moving, inside the — or in the riverbed, was moving was much — there was great movement.

If you go just south of this bridge and you go just north of this bridge on Highway — on the highway, you'll find bridges very similar, with hardly any movement. You go to the thermal expansion joints, you go to the abutment joints, you see soil that might be dislodged just a little bit, but you don't see any grinding of the barrier rails, you don't see any working of the concrete between the restrainers at the thermal expansion joints.

So, I believe, based on that, that this bridge was a local incident. And most of it — most of its problems came from the high amount of ground motion at this location.

Next slide, please.

This is a shot of Southern viaduct in San Francisco. These are some outriggers that you see on some of the double-deck portions, and this is the classical kind of shear that we saw.

Next slide, please.

Zooming in on one of these sections, you see the Number 18 bars, and you see some Number 4 ties at 12 inches. Okay. The ties are pre-world-of-ductility and designing reinforcement details for concrete elements to behave in a ductile manner. This is what the retrofit program is all about, to modify these elements so when we do see severe or maximum credible events, they might crack, they might yield, but they will not collapse, we will not see life-threatening behavior.

Next slide, please.

Okay. These are some of the outriggers that are around the Bay Area. And this is the typical kind of shear failure or cracking that we saw in the knees. This is, again, part of the retrofit program, and we have performed some research on it, and we feel we know what the modifications are, and we're ready to go and do them.

Next slide, please.

This is a shot, again, of the affected area. And this time, I wanted to look at just the modern structures, the structures that have been designed and constructed since 1971, or since we started thinking about ductility, or the world started thinking about ductility. And you'll see one star, which is 980 southbound, which is an outrigger bent. Okay. The modern structures performed well.

Next slide, please.

Okay. The initial steps in the retrofit program, as I mentioned before, had to do with tying the superstructure elements together to force them to behave in more of a continuous manner, not allowing drop-off type failures. To me, this is evidence that that effort was very worthwhile, evidence of the concrete spalling just above the restrainer cable hole, to me, shows that this is — this cable unit was working.

Next slide, please.

Okay. What have we learned from this, this earthquake?

Major bridge damage on soft soils, okay; those localized pockets of damage, except for the very close-in regions, seemed to be on soft soils, okay; primary problem with joint shear failures — and the post-'71 bridges performed well; initial restrainer or initial retrofit programs proved worthwhile; and the outrigger knee joints, those designs need to be improved, and there's a need for retrofitting out there.

Next slide, please.

Future needs. Okay. This is what we're working on.

Retrofit of all double-deck viaducts. We've mobilized just about every credible bridge engineering firm in Northern California, and there's a united society of engineers working on this problem, and the plans were due in January 3rd for retrofit on all of those structures. And we believe, in the not-too-distant future, we'll have them open and safety will be very high on these structures.

Speed up all other retrofit programs. Okay. In the past, we've always looked at the money allocated and progressed based on that. Now we're getting signals from our controlling bodies and the legislature that they want to know the problem, and then fund it appropriately, looking at the same problem, but just from a different perspective.

Study all major toll bridges, the Bay Area, Golden Gate Bridge, Richmond, and the Bay Bridge, all the major toll crossings. Those are vital lifeline structures, and we want to evaluate those to the state of the art.

Research retrofit of multi-column bents, and improve criteria. Criteria or things we might actually see that are going to change in the design specification are an additional ARS curve for soft soil spectra, and an importance factor. And the importance factor comes back to a lifeline — the Bay Bridge — our present design philosophy is one that would allow minor damage, but no — no kind of or form of collapse, but minor damage would be acceptable. That may not be acceptable for lifeline structures, and we're addressing that now.

Thank you.

VICE CHAIR RIORDAN: All right. Let's see.

Mr. Chairman?

Oh, there he is.

EXECUTIVE DIRECTOR TOBIN: He's on the end.

VICE CHAIR RIORDAN: Let me just welcome you back.

CHAIRMAN CLUFF: I was over watching the slides.

VICE CHAIR RIORDAN: I lost you for a moment.

CHAIRMAN CLUFF: Well, we need to move along, but I'm sure there are some questions.

Bill?

COMMISSIONER IWAN: I have some questions, if I may.

I think we all appreciate the position of California in this whole area of highway safety. I think, since 1971, California has led the country, certainly, in trying to do — to take steps to improve the safety of the highways.

I think that we've seen, though, in all honesty, that that program didn't maybe achieve all the results that we had — many of us had hoped that it would have achieved. And I think you presented an interesting example here this afternoon, with what you've shown of the — pardon me — the Cypress structure.

And I think many of us are concerned that if you take a — even a fairly short look at that structure, and you've just given the results here now of a fairly simple, static analysis, most engineers conclude that the capacity of that structure was very, very low. And I think you commented that it was around .12 g, or something like that, which is clearly less than the kinds of acceleration that people have expected in that area for a very long time.

So, something seems to be — or had to have been, maybe, amiss, in that with fairly little effort after the earthquake, everyone was able to somehow conclude that this was a very weak structure, and could clearly have failed. But somehow, before the earthquake, that wasn't evident.

That's a long preamble, I guess, and my question, then, is that — how is this going to change in the future? What steps is CalTrans taking now to make sure that the approach that existed before the earthquake, which was basically one, I believe, of deciding on a fairly general fix that should be applied to all structures. The Cypress structure had Phase I done to it, but other, very, very obvious weaknesses were not looked at.

What's being done at CalTrans to change — if anything, to change that approach? Are you still looking at solutions being general solutions, for whole classes of structures, or are you going to look at individual structures?

And the second question, then, is if you — in that process, how are you going to prioritize the structures? Where are you going to start? You've got a lot more money now. How are you going to decide where to put that money and what's the most hazardous structure, or the next hazardous, and so on and so forth? Could you please discuss that?

MR. MARONEY: With respect to your first question, the retrofit program was initiated in '71, basically due to a number of CalTrans engineers going out in the field and evaluating the situation, much as a researcher would in a laboratory, and understanding the behavior based on what had happened there.

Okay. And a number of behavior elements were recognized, and one of them was the drop-type failure of the superstructure. Another one was pull-out type failure of the reinforcement into the footing, shear reinforcement in the footing — a number of things.

Okay. The approach in '71 was, we'll do — we'll first address the superstructure, because even if we do the substructure, and the superstructure doesn't act as a continuous unit, we still can have problems. So, that was based on the financial support at that time. We attacked the first piece of the pie, if you will, and in 1987 we started going after the second piece of the pie.

And in that approach, we do — in all of the approaches, we address each bridge that's identified and prioritized, and we do a dynamic analysis at whatever level is required.

With respect to the second question, identification and prioritization, that has evolved through the retrofit program. In 1971, they used the resources that were available. At that time, they basically used experience. A number of bridge engineers and experienced individuals made their way through the structures and looked at the plans, and visually inspected and would identify which bridges should be retrofit.

Okay. In 1987, evolution — our evolution grew in such a way that we could now use computers to locate them in space, if you will, and we've respected proximity to faults. So, we've respected the ground — peak rock acceleration. And in the analysis, we looked at the type of ground, for amplification, et cetera. And any structure that was close enough, using attenuation models from the Division of Mines and Geology and USGS, that had a ground acceleration, or that could experience a ground acceleration high enough to force the columns to start yielding, we included that in a list.

Okay. And then we weighted those bridges to prioritize them, and we respected such things as structural details; skew; ADT, average daily traffic; if it was a single column or multiple columns, which means, are there multiple paths? If one column yields, can other columns help it out? Okay. There are reports out, and if you're interested, you can contact CalTrans, and they describe exactly the approach used to identify and prioritize.

And that's constantly evolving. As we learn new things and have more capacity, that grows.

Does that answer your question completely?

COMMISSIONER IWAN: Well, I'm sorry. I guess it doesn't.

You talked about the process that existed, and I guess I'm concerned, from what you presented here, the scenario, that, in the case of the Cypress structure, that process didn't work. I'm wondering now, is there anything different that CalTrans is going to do in terms of its prioritization that will, hopefully, preclude that kind of thing happening in the future?

I mean, maybe your answer to my question is, "We're going to just keep doing it the same way we've been doing it before, we're already prioritized them." I hope that wasn't the answer to the question. I hope you're going to do something differently.

MR. MARONEY: Before the Loma Prieta earthquake, the Cypress structure would have eventually been retrofit. The second piece of the pie were single-column substructures. The next piece would have been multiple columns. And the speed at which we move is strictly based on resources.

Okay. Modifications to the retrofit program, that's constantly evolving. And, yes, there are a number of people investigating different methods, and that's actually probably going to be one of the research programs that are going to be funded, an evaluation of the absolute, best way to prioritize though.

COMMISSIONER IWAN: So, right now it's not done. You're going to research how best to prioritize them.

MR. MARONEY: It's going to be going on in combination. We're moving forward, but we're also researching. And if that research suggests that we should modify even further, then we will.

COMMISSIONER IWAN: Thank you.

MR. MARONEY: All double — all double-deck structures have been moved to the top of the retrofit list.

CHAIRMAN CLUFF: Randy.

COMMISSIONER PESTOR: I'll ask you the same question I asked the people from UC. What's the — what percentage of your budget are you allocating towards seismic retrofit?

MR. MARONEY: At what level? Transportation?

COMMISSIONER PESTOR: Transportation, yeah.

MR. MARONEY: I can't answer that.

COMMISSIONER PESTOR: Okay. How many years do you figure that it's going to take for you to retrofit the structures? Or how many years do you want to? What are you planning to do, as far as the number of years?

MR. MARONEY: We want to do whatever is required.

COMMISSIONER PESTOR: Well, I mean, you come to —

MR. MARONEY: Eventually, we want —

COMMISSIONER PESTOR: — you come to us at the legislature and you say, "This is what we think should be done." Do you think we should have to tell you what to do?

MR. MARONEY: No.

COMMISSIONER PESTOR: Okay. Well, how many years do you think is reasonable for CalTrans to upgrade its highways?

MR. MARONEY: We have to — we have to investigate every bridge that's close enough to a fault, or could possibly experience ground acceleration. And that time is going to be based on resources and what we find in the investigation. And if I gave you a number, it would — it would not — it wouldn't be based on good data.

COMMISSIONER PESTOR: And before the earthquake, when you were coming in with your budget requests, did the governor just say, "No, you can't have those resources," to — you know, to continue with that retrofit program the way you thought was necessary, or what? How did — where did this stall?

MR. MARONEY: That's not happening at my level. You'd have to talk to people at a higher level, like the director's office.

COMMISSIONER PESTOR: Okay. And then one last question.

I understand that Assemblyman Katz feels that funds from gas tax revenues should go towards seismic retrofit before they go towards new highway construction, that the priority ought to be to make sure that the freeways that we have now, and the bridges and so on, should be safe before we talk about building new freeways.

How do you feel about that? Are you going to be supporting that effort, or do you feel that we should just keep on building more and more before making our existing structures safe?

MR. MARONEY: Again, I think that's a question for society, not just one engineer.

COMMISSIONER PESTOR: Well, I think it's also something that CalTrans ought to be addressing. That's kind of along the lines of Mr. Iwan was asking you earlier too. I mean, we look to you to, you know, let us know what you think should be done and fit this into. I mean — or do you think we should — the legislature should be telling you what to do? Is that where you think the priorities ought to be set right now, rather than the governor, rather than you, that it's up to the legislature, then, to tell you what the priority is?

MR. MARONEY: Yeah, I see no reason why those two can't proceed on a parallel course.

CHAIRMAN CLUFF: Bill?

COMMISSIONER WASTE: I say this as a non-engineer —

CHAIRMAN CLUFF: Please speak into the microphone.

COMMISSIONER WASTE: Are you getting it now? No?

I say this as a nonengineer, one who goes around the construction business, and also from modernizations of the freeway structures in Japan, there's a lot more steel used in the structures there, versus the ductile material. And having seen the performance of the Cypress structure and the ones here that got into trouble, is there any thinking at your level within the state, which is the major builder of these structures, to the use of more steel in the understructures, not reinforced steel, but pure steel?

MR. MARONEY: You're asking for my opinion. The selection of — we typically use prestressed concrete, and that's strictly driven by economics. And concrete can behave ductilely, as steel, okay, if it's designed properly and detailed correctly. But right now, the selection, or the reasoning behind the selection of concrete-type structures, is strictly because you get a better deal for your dollar, and at present technology, you can design structures to be ductile and still made out of concrete.

CHAIRMAN CLUFF: Stan?

COMMISSIONER SCOTT: This morning we adopted a motion to write a letter to CalTrans on the merits of the use of an independent review, and I guess that motion applies specifically to the work at the Embarcadero — or was your motion more —

EXECUTIVE DIRECTOR TOBIN: I think it was more general.

COMMISSIONER FRATESSA: It was more general.

COMMISSIONER SCOTT: It was more general.

COMMISSIONER FRATESSA: Yeah.

COMMISSIONER SCOTT: Then I'm just wondering if you're prepared to comment on the extent to which CalTrans is using or planning to use independent review in its retrofit program, at least the major facilities, or if not, if it would be helpful to get that kind of information on the resources.

MR. MARONEY: The retrofit of the viaduct structures, which include the Embarcadero, are currently — the retrofit is being performed, or the design is being performed, by two consulting firms, which —

COMMISSIONER SCOTT: Which structures?

MR. MARONEY: The Embarcadero, Terminal, Southern, and Central.

COMMISSIONER SCOTT: All of the particular ones that were damaged in the Bay Area.

MR. MARONEY: The double-deck structures, yes, the ones that were —

COMMISSIONER SCOTT: Will you be expanding that and using independent reviews in the retrofitting of other facilities around the state?

MR. MARONEY: At this time, I believe, in just a few months, there will be some consultants used.

COMMISSIONER SCOTT: There will be what?

MR. MARONEY: There are — we're looking now, reviewing the credentials, of a number of consultants.

COMMISSIONER FRATESSA: Stan, I don't think you got your question answered. I think you heard something, and it's not the answer you were looking for.

COMMISSIONER SCOTT: Well, help me, Paul.

COMMISSIONER FRATESSA: What I heard you say was that, for two projects in the Bay Area, they are under design by engineers. Stan's question is different than that. Are those designs by those engineers being peer-reviewed by an independent peer reviewer, expert in seismic design?

MR. MARONEY: If this will help you, I can name the consultants. They are consultants outside of CalTrans. If you mean a panel of experts from a number of different sources, at this time I can't answer that.

COMMISSIONER FRATESSA: The standard of care for peer review is that they be independent of the original designer, regardless of who the designer is.

MR. MARONEY: Okay. I just —

COMMISSIONER FRATESSA: That's what we're referring to. And we're going to be sending a letter, which has, I think, already been drafted, which basically asks CalTrans to do that as a matter of policy on all retrofits. So, whether you select the designer as in-house or you retain a consultant, that design is peer-reviewed by an independent expert.

MR. MARONEY: That was already performed before the Loma Prieta earthquake, because Embarcadero was actually being — it was in the stages of being designed — the retrofit was being designed. And I would imagine that peer review — that peer review panel was active before the earthquake. I'm sure they'll be active afterwards, looking at the modifications.

COMMISSIONER FRATESSA: Well, I have talked to one of those so-called peer reviewers, and, no, they are not active, and you're going to be asked to have them active.

MR. MARONEY: Thank you for your input.

CHAIRMAN CLUFF: Any further questions or comments?

Bill?

COMMISSIONER IWAN: Well, I just — maybe just to try and wrap up, I guess I still have some concerns as I've been listening to what you presented, not over the technical details, because I'm convinced that there's technical soundness in what you're saying and so on, but a number of questions have been raised about the overall goals and the way the program is going to go ahead.

And what I hear you saying is that it's going to be accelerated, and my concern is that if you take something which may have had some flaws to begin with, and you just accelerate, you're going to accelerate the good and the bad.

And I think what I'm asking for is, has there been an internal examination of how this program should go and how it might — maybe should be changed, not just accelerated, but maybe different ideas, how you're going to re-evaluate priorities? What is your timetable, I think, as was asked over here? Do you have a timetable? Are you — you talked about doing things in parallel.

And I guess, Mr. Chairman, I don't want to prolong it now. I think it's probably not fair to the present person to ask him all these questions because — I think you said, you know — maybe somebody at a different level needs to answer some of these things. And I would just wonder if maybe in a future meeting, we could ask someone who maybe is at that place in the organization who — concerned about those kinds of issues, if they'd also come and speak to us, if that would be reasonable.

CHAIRMAN CLUFF: Yeah. I think, Bill, that one of the reasons we're so far behind schedule, the discussions have been very fruitful and the questions are very logical questions, but if you look at what we asked the people to do —

COMMISSIONER IWAN: Yeah.

CHAIRMAN CLUFF: — it's just come and report to us about what happened in the earthquake. And we've kind of expanded that, and that's eating up a lot of time. And it's a very valuable thing to do. Perhaps we need to have another series of meetings where we get more into the kinds of things that we're talking about, and, clearly, not of the level of the person that was here.

EXECUTIVE DIRECTOR TOBIN: Yeah. In all fairness to our witnesses, we've told them, you know, that we're hearing about experiences on the earthquake, and not necessarily to talk about their programs. And in the matter of CalTrans in particular, I think we've made a decision that we were going to wait till the independent Housner Committee —

CHAIRMAN CLUFF: Right.

EXECUTIVE DIRECTOR TOBIN: — finished their work, and that CalTrans had a chance to think about it, before the Commission got involved in some of these questions.

You know, so I think that we're doing ourselves —we're sort of misleading ourselves by jumping ahead of where we want to be.

COMMISSIONER IWAN: Yeah. Well, I think, at a future meeting. We ought not to pursue it now, but at a future meeting.

EXECUTIVE DIRECTOR TOBIN: Right.

MR. MARONEY: In brief, we are involving a number of individuals, outside of even transportation, that face similar problems. Cygna, they're reviewing some of the things, and we're very open about what we do. And the Blue Ribbon Panel, the Housner Panel, will be reviewing, among others.

CHAIRMAN CLUFF: Thank you very much for coming to talk to us today.

I just want to refer back to Items VI and VII, which was the unreinforced masonry buildings law amendments and the high-occupancy buildings. Because of the time constraints, we're going to put those over to the next meeting. But those of you who are involved and have a great interest in that, please get your comments in to our staff as soon as you can, and we'll officially take those up at the next meeting.

We'll proceed with the agenda, and the next spokesman is the Division of Aeronautics, Jack Kemmerly.

And I would ask the presenters of the rest of the session to try to keep it to ten minutes, if you can. We'll try to keep the questions as well as we can so we can try to get through today's agenda.

MR. SIDERIS: To begin with, I'm not Jack Kemmerly. He's at another meeting, and so I'm his deputy.

Perhaps a little background on the Division of Aeronautics. I'm sure every one of you was well aware that the state had a Division of Aeronautics, but in case one of you may not have, the division is 35 people strong. It doesn't own or operate any airports, so we don't quite get into the problems that the other part of CalTrans does.

Our basic functions are two: one, we regulate in the areas of safety at the airport and noise emanating from the airport; our second function is local assistance. Similar to the next speaker, we have aid programs in which the division provides funds for capital improvements and loans.

The question on the agenda that we got yesterday shifted to ask what the impacts were on the California Aviation System Plan.

In the local assistance, planning is probably our single most person-user. We have more — probably more planners than we do any other discipline. We're in the process of updating the California Aviation System Plan. Phase One has just now been completed under a grant provided by the FAA. We are embarking on Phase Two.

The impact of the airport on the system plan at this point would have to be considered negligible, because the plan itself is aimed at the year 2010. So, the — we're looking at the impacts that affect the department in the immediate present.

When the earthquake hit, we had two airplanes. Both of the airplanes were out of the area. They came back, and the next day we were unable to communicate with any of the reports. We had received no reports via Office of Emergency Services, or any of — directly from any of the airports. Our efforts to communicate with them, as everybody else found, was somewhat unsuccessful. We were not able to get through to any of the airports. So, the — Jack and another pilot took off and went around and physically looked at a number of the airports in the Bay Area.

Watsonville was reported to be closed. However, when Jack landed there, the airport was operating and was the — a main source of access to that area.

A little regression — about six or seven years ago, the City of Santa Cruz closed the airport it owned, which would have been much closer than Watsonville. So, in terms of if there had been a major medical catastrophe at Santa Cruz, their earlier action of closing the airport would have been a little more detrimental to their community than it — than it turned out in this instance.

In the survey that was conducted, only two airports reported any significant damage.

San Jose did not close. It did not report any major damage that we were aware of.

San Francisco International had no major damage on the operating surfaces.

Oakland, however, did lose 3,500 feet at the end of its runway. It closed for a few hours, but reopened. 7,500 — 6,500 feet were sufficient to accommodate most of the aircraft.

The major things that came up to us was, one, the same as Mr. Andrews and Mr. Freeman brought out, is communications don't seem to be adequate. This satellite link that's being talked about, presumably, hopefully, will respond to that.

The other major item that came out, and we're discussing it among ourselves and will probably bring it up with the FAA, is the airports, the small airports, do not appear to have any back-up power, electrical power. So, in the case of Watsonville, when it first went — when the earthquake first hit, it lost power, so it lost any capability to operate at night. Fortunately, the power did come back on.

We then started looking at other airports, and we found that practically no — none of the small airports has back-up power. So, we're now considering — that may become a prime item in earthquake-prone areas, at least, for the division and other agencies, possibly, to fund generators to provide power.

In some cases, if power's out, you may not even be able to field an aircraft at the particular facility. Instruments — certainly the electronic instrument aids would all go out, so a facility in poor weather may not be useful. Fortunately, in this case, the weather was reasonably clear. And if any of the airports did lose their electronic aids, the weather wasn't a factor in closing them down.

As an aid to helping you get back on schedule, which I don't think you can do, but to speed up the process, I'll go ahead and answer any questions.

VICE CHAIR RIORDAN: We certainly appreciate that.

Commissioner Iwan?

COMMISSIONER IWAN: Well, yes.

As a frequent air traveler, I've always wondered about a few things, and now I have the opportunity to ask.

You know, when we look at some of the scenarios for earthquake damage, say, in the Los Angeles area or the Bay Area, this certainly was not the design earthquake. We're looking at much more extensive damage to facilities and power outages and so on. But even in this case, SFO had damage to the tower, and so, at least for a while, they were unable to function.

I wonder to what extent the FAA worries about this kind of a situation, and, in fact, has made plans for that contingency. I think, for example, on a busy, bad-weather evening in Los Angeles, how many planes may be on final approach to LAX? And if there's a total loss of power, to what extent are the airline procedural manuals written with this in mind, that you might have, suddenly, loss of communication, not only with the tower, but with the local L.A. — and so on and so forth? To what extent does this planning enter into decisions the FAA makes?

MR. SIDERIS: As I mentioned, the small airports, we found few, if any, have any back-up power.

COMMISSIONER IWAN: Right.

MR. SIDERIS: The larger — Carl Shellenberger (sic), from the FAA, who will be your next speaker, can probably respond to that much more accurately than I can.

COMMISSIONER IWAN: Well, he's —

MR. SIDERIS: You do have the FAA here, so —

COMMISSIONER IWAN: Okay.

VICE CHAIR RIORDAN: Maybe we'll hold that question.

COMMISSIONER IWAN: He'll know what we're going to — what I'm going to ask, anyway.

VICE CHAIR RIORDAN: Any other questions?

(No response)

VICE CHAIR RIORDAN: Well, we certainly thank you very much.

And Carl Shellenberger (sic), if you'd come forward, please.

You already know what one commissioner wants to know, but perhaps you'd like to give us an overview, and then we'll open it up for some more specific questions.

MR. SHELLENBERG: Sure. I'd be delighted to.

Let me just first of all say, it's long enough as it is — it's "Shellenberg."

VICE CHAIR RIORDAN: Shellenberg. Excuse me.

MR. SHELLENBERG: My name is Carl Shellenberg, and I'm the deputy regional administrator for the FAA, located in Los Angeles.

Our responsibility covers the states of California, Nevada, Hawaii, and the — all civil aviation activities in the Pacific Basin. In that regard, we provide a series of services, and I think I should detail them for you so that may guide some questioning you may want to conduct.

First of all, we are responsible for the provision of air traffic control, both through airport control towers, approach control radar facilities at the larger airports, en route air traffic control centers, one of which is located in Oakland, also provision of air traffic control services through flight service stations, primarily by means of providing information to pilots.

In addition to that air traffic control function, we also serve as a safety-certifying function, both for airports, airmen, and air carriers, to ensure the appropriate level of safety.

In addition, we also provide funding for airport development, construction of runways, things of that nature.

On the evening in question, of the earthquake, we exercised our normal control function of a crisis to establish a crisis management center at our office in Los Angeles, to respond from the aviation potential to the earthquake emergency. I was personally in command of the crisis center that night, and the center was convened at approximately 5:30, and we began to direct all of the agency activities out of the Los Angeles office.

Another critical facility, I think, that you need to know about is that we maintain what is known as a central flow control facility in Washington, which is responsible for balancing air traffic throughout the country, to ensure that airports and air traffic is capable of handling the demand for both airports and air traffic services.

One of our initial functions was immediately to try to determine the capacity and the status of all of the major airports within the system in the Bay Area, to ensure that they were capable of — excuse me — handling the traffic that was present that night.

So, as a result, one of our major functions was to, through the established communications mediums, to find out, on a continuing basis, what was going on at each of the airports in the Bay Area. We were, I think, quite successful in doing so, notwithstanding the fact that that was all done by means of telephone lines and telephone hookups with all the facilities. In most cases, normal telephone service, normal commercial telephone service was not available, but we were able to utilize a redundant federal telephone system, which is a separate system of telephones, which operated throughout that evening and which allowed us to have up-to-date information.

It was that information that allowed us, therefore, to balance the needs for air traffic throughout the evening and into the next day.

An example of the kinds of problems that we faced — and I'm sure you realize that during that night, San Francisco International was closed by the airport operator — let me emphasize the fact that it was closed by the airport operator — air traffic was still available that night, and we did not, in fact, close the airport.

I'm not taking an issue at all with the closure of San Francisco; I think it was the appropriate thing for the City of San Francisco to do under the circumstances. But notwithstanding some damage to the tower, air traffic control was still being provided and capable of being provided.

But, at any rate, we were able to determine the status of San Francisco. The type of problem that was developed, for example, was — there was a bank of international flights coming in from the Orient, which, as you probably realize, are all scheduled in clumps because of the difference in time. That bank of arrivals was due to come into San Francisco starting at about eight o'clock in the morning. With the unknown status of San Francisco, being closed during the night, one of the major things that we had to do was to determine where we could put all of those international arrivals.

And that was a continuing kind of process, and the kind of effort that we went through in Los Angeles and with our central flow control facility in Washington.

As it would happen, San Francisco was able to reopen by the time that bank of arrivals was coming in, but we had made alternate arrangements for those aircraft to go.

One of the questions that you mentioned earlier on is: do we have contingency plans in the event an airport is not able to handle aircraft coming in? The whole business of aviation safety and aviation operations is one that is really premised on a concept of redundancy, a concept of back-up systems, alternatives, and additional things to happen in the event the thing that you planned on in the first place did not happen.

Every commercial flight that is conducted by an air carrier to a particular airport has an alternative airport already planned, already provided for, and some redundancy and additional — if you can say — latitude for additional fuel is also brought in on every flight. For example, a flight coming to San Francisco as its designated arrival point would have to have an alternative airport selected, sufficient fuel to go to your first airport, operate, then, on to the second airport, and then to operate for an additional 45 minutes of time after that.

Now, I grant you, most of those alternatives are premised on weather delays and an airport not being open because of weather, but it works equally well in the case of a natural disaster such as an earthquake. So, each of those aircraft that were en route to, say, San Francisco, could have diverted to another airport, had additional fuel, had enough fuel to do that, and then some cushion beyond that.

So, I think it works well, and did work well in the case of the earthquake, to provide that additional background and back-up.

The primary damage that was sustained, both by our facilities and by the airports that are facilities are located upon, can be summarized in a couple of ways.

First off, in our air traffic control towers, we lost a great many windows in the Bay Area, approximately twenty-some-odd windows. In the San Carlos tower, we lost all but one window in the facility.

Those windows are designed to fail in exactly the manner they did. Most of the windows are put in at an angle such as this. That's designed for two things: to reduce the glare so that the air traffic controller can see what's actually going on; they're also designed so that they will fall out of the tower cab, rather than in and be a hazard to the people in the tower. All of the windows that did, in fact, fail failed in the manner designed; they fell outside and did not damage the individuals. We did have some personal injuries in some of our towers.

And some lessons we've learned is, there are some designs that we had for the tower that we're going to try and change. For example, all the counters that our controllers work at, before this, were covered in glass. Papers could be placed under the glass, it was easy to clean. Unfortunately, when ceiling materials fell on that glass, the glass shattered, and some of the individuals received some cuts as a result of that.

We are presently looking into that and will change that, and, in fact, have already changed it in the facilities in the San Francisco area.

One of the things that was mentioned by the previous speaker was the loss of some of the runway at Oakland International Airport. Initially, the length of that runway was reduced down to 6,500 feet. Subsequently, some additional footage was added again, and we are presently working — the City of Oakland is working — Port of Oakland — excuse me — is working to rehabilitate the last 1,500 feet. The federal government is participating in that by means of funding, and it appears that that will be completed sometime within the spring to restore the full length of the Oakland runways.

One of the other damage concerns we had, which turned out not to, in fact, be a problem, was with regard to the existence of air navigation facilities in each of these airports. They're all connected electronically by underground cables.

Immediately after the earthquake, we were very concerned that stretching of these cables subsurface could cause shortages, because if moisture got in when the rain started sometime after the earthquake, we were very concerned, kept on top of it, to monitor and make sure that that didn't cause a lot of damage.

As it turned out, we were pleasantly surprised that that didn't create as big a problem as we thought. But nonetheless, I think we were relatively well prepared for it.

Following the incident, the earthquake, we've conducted a number of critique activities to try and hone our operation and make sure we don't repeat mistakes and we can learn some things. We've conducted some internal reviews in the Los Angeles area of the way that the overall operation was managed. We have conducted some critique reviews in San Francisco, wherein we invited all of the controllers that were on duty during the earthquake in to participate in a critique session, to identify problems and suggest solutions. We're in the middle of that process. We're learning some things.

Some of those things are defined by some building redesign issues, the glass I mentioned to you, some of our internal structures in our facilities are going to be revised.

I think the one thing that we did learn, however, was that we are very proud of the way that our employees in San Francisco continued to provide air traffic services that night. They stayed on duty. We were able to handle as much traffic as possible at most of the facilities, and I'm very proud of the employees in the Bay Area and their performance.

One aspect I think that you should know, in putting together how we react to a situation such as this, is that when, for instance, we lose some capacity in an airport such as either San Francisco or Oakland, we begin to put into the system means by which we reduce the demand for those facilities.

Through flow control and other means, we are able to — rather than have an aircraft show up in San Francisco without a place to land, not let that aircraft depart from its original point. Or, in other words, we'd stop it in Chicago before it ended up in San Francisco. And we have the capacity, through central flow and through the use of this information that I've talked about, to modify the system as it goes, so that we control that demand and we do not present problems at a facility that's impaired, such as the way some of the facilities were reduced in San Francisco.

We will be working, incidentally — and have established a need to share additional information — with the Department of Aeronautics and CalTrans. We have some meetings scheduled in the next month to establish some new communications channels, which should help to keep the information that they need for their functions and that we particularly need to keep the air traffic system safe. And I'm encouraged that we'll improve that.

That's all I have to say. If there are any questions, I'll be happy to answer them.

VICE CHAIR RIORDAN: Let me say thank you.

And, Mr. Kockelman, then we'll go to Commissioner Iwan.

COMMISSIONER KOCKELMAN: It's a quick question.

I was interested in your observation that the ceiling tiles fell.

MR. SHELLENBERG: Yes.

COMMISSIONER KOCKELMAN: It's my understand that's very easy to strengthen those, or retrofit them, or tie them down. Have you all issued orders to all the seismic zone airports in the United States to tie down the ceilings?

MR. SHELLENBERG: We are in process of re-evaluating right now our specifications for those. We have not yet reached a conclusion whether that should be done in other seismic areas. But if we do, we'll, of course, correct that problem.

COMMISSIONER KOCKELMAN: Do you have power to issue emergency instructions or directives on something like that?

MR. SHELLENBERG: Well, all air traffic control towers, let's say the great majority of them, 99.9 percent, are operated by the Federal Aviation Administration. Yes, we do, in fact, have authority to change those.

COMMISSIONER KOCKELMAN: Thank you.

VICE CHAIR RIORDAN: Commissioner Iwan.

COMMISSIONER IWAN: Yes.

You did answer my question a little bit, and I — if I could just maybe rephrase it to make it a little more specific. I certainly appreciate the idea of redundancy, and I — obviously, that's one of the things that makes the aircraft — the whole aircraft business work.

I guess what I was wondering is whether, in your planning, you rely simply on the abundance of redundancy in the system, or do you do specific planning for the earthquake hazard? That's a rather unique event, and I'm wondering if you plan specifically for that, or if your planning is of a general nature, just saying, "Well, we're prepared because of all the redundancy in the system."

That's my first question, and I have another one.

MR. SHELLENBERG: On a nationwide basis, our redundancy planning, or our contingency planning, if you will, is generally not based upon an earthquake scenario. That is correct. In California and other areas where we have the potential, our planning is, let's say, amplified to include the earthquake potential.

Our planning includes the way we build our facilities. We have contingency and emergency plans for each of our facilities, to make sure that they've got ways to respond to both aviation emergencies as well as natural disasters such as we're talking about.

Obviously, most of our planning is done one facility at a time, as opposed to having multiple facilities impacted, the way they were in the San Francisco area and the way they would be in any other earthquake. So, we've had to amplify them.

We've learned some things that we want to include in that planning and those contingencies, as a result of what happened in the Bay Area this time.

COMMISSIONER IWAN: I think it would be just very interesting to have a kind of a systems analysis of a major earthquake, either in — a really big earthquake, either in the Bay Area or in Los Angeles, and see what the impact might be to the aviation transportation system.

A follow-up question, though. The other hat that you mentioned is in the funding of airports, expansion, and so on. And I wonder the extent to which you consider in that funding seismic safety. For example, you mentioned that the federal government is participating and helping to fund the repair of the runway at Oakland International. To what extent are steps being taken to make sure that that is done in a way that it won't fail the next time?

I observed a great deal of liquefaction around that terminal. I wondered at the time to what extent, when they decided to expand that terminal and build and so on, did anybody ask questions about possible liquefaction potential here, before giving them the money.

Do you get what I'm after?

It's possible, to me, at least, that you could perform a role in helping to direct people's attention towards the need to consider seismic safety before they're eligible to receive big chunks of money to do things that might not be safe.

MR. SHELLENBERG: Well, I think you should know that our primary focus is what we refer to as the air side of an airport. It is, generally speaking, the runways and the taxiways, and, of course, we review those to ensure that those design standards are ones that, in an area such as that, that take into consideration the seismic questions.

The issues of how terminal facilities are generally constructed are, however, matters more within local jurisdictions, local building codes, issues of that nature. I think that's the appropriate way to treat those.

COMMISSIONER IWAN: Thank you.

VICE CHAIR RIORDAN: In the interest of time, we want to say thank you — yes, Tom? Very quickly, because we need to be fair to those speakers who are left.

EXECUTIVE DIRECTOR TOBIN: In one of our hearings, we've heard that the traffic in San Francisco was slowed for some period of time as the controllers did a heroic job of bringing the planes in, one at a time, having to wait for planes to clear, because the sound was so loud with the windows out. And it seems, if the glass had stayed in place, that the capacity of the airport would have been much greater. Had it been a larger earthquake, that would have been a vital link for relief supplies and so forth.

Is it possible that the FAA sign criteria could provide for window installations that would not fall out an earthquake?

MR. SHELLENBERG: Well, I think one thing we'd have to do with is change the physical nature of the glass, in order to absolutely ensure that that happens.

One of the things — we are investigating the ways in which it can be mounted, the cushioning aspects of it. But I think, sort of inherently, we're probably going to lose glass out of towers with a similar kind of earth movement that we had there.

We experimented in the aftermath with installing plexiglass as a temporary replacement in some of the towers. As an initial way to seal in and seal out the noise, it was somewhat effective. As — because of its visual properties, it was difficult for the controllers to really do their job a proper way using plexiglass. So, as a permanent replacement, I think that would — does not appear to be a fruitful way to do business.

At San Francisco, the City of San Francisco was quite good in getting those windows replaced very rapidly. It was a noise problem. It was difficult, but nonetheless, they were able to keep some level going.

And what we were trying to do, obviously, is to keep it — provide those air traffic services so what was ever necessary for emergency supplies and whatnot could be maintained. And I think they were relatively successful in doing that.

VICE CHAIR RIORDAN: Commissioner Snyder, and then —

COMMISSIONER SNYDER: Yes, a quick question.

Did you have problems with some of the other nonstructural hazards, such as the computers, those kinds of things? Did they tumble off their stands or their shelves?

MR. SHELLENBERG: In what we call the administrative areas of some of our towers, we had a lot of equipment sort of jumbled up and fallen down. Our computers that are actively involved in the control of air traffic continued to function, generally speaking. Once again, those are, again, all redundant, and we have back-up computers. They are installed in a way to isolate them from shock. And generally speaking, they operated fairly well.

There were some failures —

COMMISSIONER SNYDER: Well, if, in fact, there were some failures, have there been any steps or measures taken to assure that that might not happen in other seismically active areas?

I'm in and out of Los Angeles about three or four times a week, and that thought has occurred to me.

MR. SHELLENBERG: Yeah. We have not instituted any major design changes to —

COMMISSIONER SNYDER: No, not major design — simple things, velcro strips to hold the computers, you know, very simple, nonstructural measures that are very low-cost, those kinds of things. You know, the federal government promotes it; FEMA has brochures on how to do it. And I find it quite surprising that as critical a structure as an airline control tower would not have taken those measures.

MR. SHELLENBERG: Well, I'm unaware of the — how velcro would help on the — on the kinds of computers that I'm referring to. These are major, large pieces of equipment, which all continued to operate and are all fairly well isolated from a shock point of view, so that I am unaware, for those, of any needed changes in either design or the way they're utilized.

Administratively, the equipment that was lost did not produce any kind of a hazard with regard to air navigation. Those all worked continually.

COMMISSIONER SNYDER: Thank you.

VICE CHAIR RIORDAN: Again, thank you very much.

And we're going to move on to the next presenter, and this is for the Energy Commission.

And, Susan Brown, come forward, please.

MS. BROWN: Thank you very much. Good afternoon.

I must admit I feel a little bit like the last ballplayer up to the — or one of the last ballplayers up to the plate before the seventh-inning stretch. So, in the interests of time this afternoon, I'm going to try to briefly summarize the written report I've left for the panel members.

My name is Susan Brown. I am the manager of the Energy Commission's Contingency Planning Office, and our office is responsible for maintaining the plan, the state plan, for responding to potential energy supply disruptions.

Over the last 18 months approximately, we've followed the procedures in our plan to respond to a number of incidents that have disrupted the supply of electricity, natural gas, or petroleum. Such instances include the March 24th, 1989, Valdez oil spill, a San Bernardino pipeline explosion which disrupted the supply of gasoline to the southeast desert, a platform explosion in the North Sea, and, of course, most notably and most recently, the Loma Prieta earthquake.

Just briefly, the concern of the Energy Commission is such that we are concerned with energy and fuel availability in the wake of a natural disaster such as the Loma Prieta earthquake. Immediately following that earthquake on October 17th, we sent staff to the state operations center in South Sacramento and supported the overall state effort to coordinate resources and prepare an assessment of the earthquake's impacts on energy supplies and fuels.

As I've stated in my written report, I think that the Loma Prieta earthquake, being — based on the Loma Prieta earthquake, we concluded a number of things.

First, fortunately, there was little or no damage to the Bay Area refineries as a result of that earthquake. And I think this is an important point. Only the Unocal bulk terminal facility suffered a ruptured gasoline storage tank. And I think this is a very fortunate thing, because, in many of the scenarios that we've run, including the Hayward Fault scenario, an earthquake of a much larger magnitude would have had devastating consequences to the entire Bay Area and seriously disrupted the availability of fuel.

So, in the case of the Loma Prieta earthquake, we were extremely fortunate.

Other impacts included the closure of petroleum pipelines, product pipelines, that were largely shut down for safety inspections and hydrostatic testing. These pipelines were shut down for a number of days, largely because of the state fire marshal's concern about pipeline rupture. However, we were fortunate, again, that the delivery of petroleum products in the impacted areas of Northern California were very minimally interrupted.

All in all, petroleum product supplies were adequate to meet the anticipated demand. And again, in the case of an earthquake, you find, in the first 72 hours, that demand for petroleum products initially is cut back.

On the electric and natural gas side, our California state utilities performed admirably. I think the Public Utilities Commission staff has already testified before you, and has reported that Pacific Gas and Electric Company made exceptional progress in restoring power and natural gas service to most of the impacted areas, within days following the earthquake.

The major concern was natural gas leaks, which necessitated a house-by-house inspection in some portions of San Francisco, and in Santa Cruz and Alameda Counties. The California utilities, however, worked very cooperatively together, following the earthquake, to complete these inspections. And natural gas service was restored to most of the impacted areas within days.

So, what are the lessons that we have to learn from the Loma Prieta earthquake?

Well, I think, again, that we were fortunate because of this moderate-level disaster, that the damage to the natural gas and electricity systems was very manageable. But in the case of petroleum refining and distribution systems, they, for the most part, remained intact.

However, in a more serious earthquake, such as the planning scenario for the Hayward 7.5 magnitude earthquake, we would not have been so fortunate. Widespread power outages and fires, caused by natural gas leaks, chemical spills, and petroleum product pipeline ruptures, would have been commonplace throughout the San Francisco Bay Area.

If, for example, the Loma Prieta earthquake had disabled our Bay Area refineries, there could have been more serious fuel shortages throughout the Bay Area.

Once stored emergency fuel supplies are used up, extraordinary efforts are needed, both on the part of the industry and government, to make sure that the demands of emergency services, for example, are met. And this is something, I think, that I'd like to bring to your attention because, in planning for a larger magnitude earthquake, the concerns of fuel availability could easily disrupt vital search-and-rescue operations, for example, leading to unnecessary loss of life and damage to property.

Just one case in point. In the case of the Hollister Fire Department, for example, we had reports that they were unable to get fuel, largely because of power outages, which made it impossible to get stored fuel out of the ground. Without electric power for pumping, despite all that stored fuel, it would basically have rendered emergency support vehicles inoperable.

So, these are some of the impacts, I think, and some of the lessons that we have considered in the wake of the Loma Prieta earthquake.

Now, I just want to briefly mention a couple of other things.

First, we do have what we call petroleum fuel set-aside authority. In a very severe petroleum supply disruption, be it caused by a natural disaster such as the Loma Prieta earthquake, a political embargo, or a cutoff of Alaskan oil supplies for other reasons.

And incidentally, only yesterday, we got a call from the Alaskan Energy Office informing us that the volcano, Redoubt, that had erupted, had caused the closure of the Cook Inlet Bulk Terminal facility, once again interrupting the supply of Alaskan oil to California. And that is largely caused by flooding as a result of snow melt resulting from the volcano eruption.

So, we have tracked with interest many of these domestic events which impact the supply of petroleum to California and to our refineries.

So, we do have authority under a governor's executive order, in the case of a declaration of a state of emergency, to set aside up to 5 percent of available petroleum fuels in the state for allocation and use in disaster mitigation.

Now, we haven't exercised this authority since the energy shortages of the late '70's and early '80's, and it is our policy at the Energy Commission to let market mechanisms distribute fuel before government intervention is called upon or recommended. And so, although we have this stand-by authority, we have not chosen to exercise, nor would we, except in a very extreme petroleum supply shortage.

So, I wanted to make your commission apprised of that fact.

And lastly, I'd just like to reiterate some of the recommendations that were made this morning by Dr. Andrews, from the governor's Office of Emergency Services, and by the FEMA representatives that were here this morning.

The Energy Commission was one of many state agency responders that were present in the state operations center in the two-week period following the Loma Prieta earthquake. And based on our experience there, we would offer three recommendations.

First is, we wholeheartedly support the need for a state-of-the-art state operations center. And I know, as a member of the Statewide Emergency Planning Committee, that many other state departments share this concern, because, due to cramped quarters, inadequate staffing, and the number of communications problems that occurred, largely due to the facilities, the facility itself, we were unable to get the kind of information we needed on occasion, and were unable to feed vital information on state resources and local needs into the system.

So, we applaud the governor's initiative and the suggestion that the state operations center be modernized.

And, second, in the area of communications, I think Calvin Freeman mentioned this — a number of other state departments may have mentioned this — but we really need some kind of system, communications system, one possibility being an electronic mail system, possibly a computerized system, that would allow state agencies that aren't present in the state operations center, but maintain their own headquarters and their own emergency operating centers, to communicate with each other and with OES in the wake of either a natural disaster or other state of emergency.

So, we would like to suggest that the state investigate the feasibility of some type of electronic mail system that would link up state agency responders.

And lastly, we believe that it's important that all state agencies support funding proposals to upgrade the state's emergency response capability, in particular, our capability to respond to a major earthquake. And I believe that the state Seismic Safety Commission can help us in that regard.

So, I want to offer these recommendations, and just say a few things in summary.

Based on our experience, the Energy Commission's experience, the California response to the Loma Prieta earthquake was adequate under the circumstances, because state resources were stressed, but not overwhelmed. However, in a more serious earthquake or other major natural disaster, the limits of our state's emergency response capability would be greatly magnified, and problems in communicating and facility inadequacies could hamper our response, which could lead, unnecessarily, to the loss of life and property.

So, we believe the state should continue to upgrade its earthquake and emergency response capability by planning for a larger magnitude earthquake.

I was very happy to be asked to speak this afternoon, and offer these comments, again, from our perspective and from our concerns, ranging from energy and fuel security and fuel availability. And I'm happy to answer any questions that you might have.

VICE CHAIR RIORDAN: Thank you for a very well organized report.

Commissioner Kockelman?

COMMISSIONER KOCKELMAN: Thank you.

Ms. Brown, could you expand on that word "serious" in your summary, "more serious earthquake"? You described it as one of a larger magnitude. Could you also describe it as some earthquake in a different location, say under Richmond on the Hayward Fault?

MS. BROWN: Well, with all due respect, I would —I would consult with the seismic safety experts that are probably more well-versed than I am in earthquake prediction per se. But when I used the word "serious," I actually had in mind a Hayward Fault scenario, which was the scenario that we tested last August when we participated in Response '89, which was the exercise that FEMA and the Office of Emergency Services mentioned this morning.

COMMISSIONER KOCKELMAN: Yeah. So, it's fair to say it wouldn't have to be the — it could even be the same size earthquake as the Loma Prieta, but in a different location and with different characteristics?

MS. BROWN: Absolutely. I think that my use of the word "serious" was meant to be used in a kind of a case-by-case analysis. I don't think I have a very concise definition for that.

COMMISSIONER KOCKELMAN: Thank you.

VICE CHAIR RIORDAN: Okay. Any other questions?

Yes, Tom?

EXECUTIVE DIRECTOR TOBIN: I have a quick question. This may not even apply to the Energy Commission.

At our San Francisco hearings, we heard of the San Francisco Fire Department concerns about the availability of fuel to trucks that are actually fighting fires, and that is a matter of their own reserves, as to whether or not they could get to them and whether or not they were adequate.

Who has the responsibility to see that adequate supplies of gasoline would be delivered in an emergency area, you know, under those circumstances? Is that the Energy Commission or other organizations?

MS. BROWN: I would not go so far to say that we have that responsibility. I would say that it is the responsibility of the local — of the local fuel users to ensure that they have adequate fuel in storage. Where we would be able to help is that, in a serious fuel emergency, we've developed extensive contacts with the oil industry, and we could serve as an ombudsman, for example, and intervene with the industry, because we know the contact people, we know, you know, how to help get fuel to the people that are needed. So, that's one possibility.

We would only use our set-aside authority, as I've said, in a very extreme circumstance. And it's our belief that market mechanisms will supply fuel to where needed, because it's in the best interests of the petroleum industry to retain their market share.

So, again, I think it's prudent, and we've talked to many local officials on this point, that — to have their own contingency plans. And we're willing to help them develop them, but I think that that's the kind of thing that has to be handled at the local level.

EXECUTIVE DIRECTOR TOBIN: So, if I understand right, the Energy Commission's concern would be one of emergency communications, in terms of delivering the outside resources to where they might be needed, in bulk —

MS. BROWN: Right.

EXECUTIVE DIRECTOR TOBIN: — but it's going to be up to that local responding agency to be able to —

MS. BROWN: Yes.

EXECUTIVE DIRECTOR TOBIN: — work that distribution system out.

MS. BROWN: Yes.

VICE CHAIR RIORDAN: Commissioner Waste, did you have a question?

COMMISSIONER WASTE: That was my question.

VICE CHAIR RIORDAN: I suspect the Commission can serve as a reminder to these local agencies, particularly some of the smaller ones. For instance, Hollister, I don't think you really think about, if your car goes out, how you're draw that fuel.

MS. BROWN: Yes.

VICE CHAIR RIORDAN: It's like, you know, finding that you can't raise the door of the firehouse to get the engine out at times.

MS. BROWN: We —

COMMISSIONER WASTE: Or how to get the groceries out of the grocery store in San Francisco without a car.

VICE CHAIR RIORDAN: I know.

MS. BROWN: We've been trying to get this message out, both through a very modest local training program that we've been — we've been holding training sessions for local officials in conjunction with the governor's Office of Emergency Services. We also have our own local contingency planning program, where we're actually developing model local plans. And fuel availability and fuel contingency measures are in those — will be part of those plans.

VICE CHAIR RIORDAN: Right. That's what —

MS. BROWN: So —

VICE CHAIR RIORDAN: — I think needs to happen, is that nice reminder that says, "Yeah, it could happen."

MS. BROWN: And anything you can do to help us convince local officials that there is that need and increase that awareness, we would certainly appreciate it.

VICE CHAIR RIORDAN: Okay. Again, thank you very much.

MS. BROWN: You're very welcome.

VICE CHAIR RIORDAN: All right. Let's move on. And we have Department of Mental Health, and Linda Fain.

MS. FAIN: Thank you. I'm Linda Fain, and I'm the disaster assistance coordinator for the Department of Mental Health.

To help speed the process along, I'm going to try to make my presentation brief. However, in doing so, I don't want to diminish the importance of our program.

Today I really come before you without having had the opportunity to meet with my department, as far as doing an assessment of our actions, and in coming up with any definite plans of future work, that being because we're still in our immediate response phase.

One of the things that we plan to do towards the end of the month is have our after-action report meeting. And in February, the 8th, the local mental health directors conference is meeting, and we're going to sit on a panel. And after those two occurrences, I would be more prepared to give some better input of where we need to go from here.

Today I'd like to start my presentation with a message from our director.

Unlike such concrete damage as the broken Bay Bridge or the collapsed 880 freeway, the emotional strain of a disaster continues, and will, for months to come. While it would be nice if it were as simple as clearing away the rubble and reconstructing buildings, our work proceeds slowly, and the needs may actually become greater before they subside.

Those needs are continuing to make themselves known. Mental health departments in the impacted counties are performing admirably under the most challenging of circumstances. Likewise, other local mental health departments are to be commended for their immediate and generous offers of assistance. The willingness to set aside geographical boundaries has been evident as county and state employees work together to cope with the emotional aftershocks still rumbling through the region.

Within hours of the event, I, as the department's disaster assistance coordinator, reported to the state operations center, as outlined in our mental health plan on file with the Office of Emergency Services. There it's my responsibility to coordinate any of the requests coming in for mental health assistance, and also, at the same time, to begin to coordinate with the local mental health disaster coordinators their efforts in providing services to the community, and helping them to begin their needs assessment.

The local county mental health agencies immediately began providing easily-accessible disaster mental health services and counseling to disaster victims, their families, and emergency workers. Recognizing that the provision of these disaster-related mental health services could easily usurp existing mental health funding, the federal government includes such services in allowable programs funded with federal grants. These programs are 100 percent federally-funded, and they are for the services to the community. They do not provide funding for preparedness or for any research.

Authorized under the provisions of the Robert K. Stafford Disaster Relief and Emergency Assistance Act, these grants allow mental health departments to cope with the emotional aftermath of a disaster, without discontinuing other equally vital mental health services.

There are two federal grants available for provision of these services. The first, an immediate service grant, covering the initial 60-day period, is designed to provide short-term crisis counseling at no cost to the victims. Time is of the essence with this grant, as the state, on behalf of the county, only has 14 days from the declaration date to apply for the funding. If a county is not included in the initial grant, it is ineligible to receive long-term follow-up funding.

State and county staff worked together to successfully meet this application deadline, and on November 3rd, the announcement of a federal $2.1 million grant award was made to provide services in Alameda, Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz, and San Francisco Counties, between October 17th, 1989, and December 17th, 1989.

Prior to the end of the immediate program, it was determined that the earthquake victims were continuing to experience a variety of emotional and mental health disturbances, which, untreated, could have become long-term. Subsequently, on behalf of the seven severely-impacted counties, the State of California has requested federal funding for a nine-months crisis counseling training regular program grant. FEMA has approved continuation of the immediate program until the start-up date of the nine-month program.

The nine-months grant proposal is currently in the review process, and it's really a difficult time now, because we're sort of in limbo waiting for a decision to be made, and not knowing when we can start contracting for those services and winding down on the immediate phase.

The staff hired with assistance funds is responsible for responding to disaster-related needs. Although funding comes from the federal government, the actual staff to provide these services has come from a variety of sources.

Within 24 hours of the disaster, more than twenty counties had contacted DMH with a list of available staff. State DMH staff then worked with the impacted counties to determine staffing needs and mobilized offers of assistance. This was augmented by staff from the state DMH, both at headquarters and at the state hospitals.

To date, several hundred county staff and more than 25 state employees have been deployed in rotating shifts. Together with services provided by the impacted counties, these teams, and numerous volunteer agencies and individuals are providing all necessary mental health services to the impacted area.

The nine-month grant will — the staffing will not be from these outside entities. It will be primarily from within the impacted area, either the county mental health agencies or through their contract providers.

The elements of service are uniquely geared to each affected county. However, all counties are providing outreach, screening and diagnosis, individual and group crisis counseling, and follow-up referral, education, and information services, training community professionals, and debriefing. Services focus on helping victims use their strengths and reconnect with natural support systems. Education emphasizes the normal reactions that people have to disasters and how to deal with these.

Without intervention, long-term effects, such as increase in domestic violence, alcoholism, unemployment, absenteeism from work, depression, et cetera, may occur. Particular emphasis is being given to the following population categories: indigent and minorities, especially the migrant farm workers, Hispanic and Asian population, children and adolescents, elderly, disaster workers.

As of December 5th, 1989, the counties documented that they had seen over 35,000 individuals, and have held over 16,000 group sessions.

I think two key reasons that this response has gone so well are that there's been a real good coordination between the local and state mental health, the Office of Emergency Services, FEMA, and the National Institute of Mental Health, and the second being the preparedness activities that took place before the event.

Following the Whittier Narrows earthquake, the California Department of Mental Health reassessed the role of the disaster assistance coordinator. The department recognized that programs for providing mental health assistance following a disaster are likely to be more effective if predisaster planning has occurred. The department agreed it would require a full-time staff to adequately assist the 58 counties to be prepared to meet the mental health needs of their communities following a disaster.

Some of the activities that took place were, of course, first, the full-time disaster assistance coordinator at the state level was identified. We identified each county — a disaster coordinator for each county. We distributed educational materials to all the counties. We did a survey of the county mental health disaster assistance programs to see where they were at. We have begun getting back with them and helping them where they were deficient.

This is a huge undertaking. There's still a lot to be done in that area.

We are working on revising our state disaster plan and assisting the counties to have a disaster plan, not only to have a disaster plan, but have it incorporated into the county plan so that they participate in countywide drills, and that they're on the call-down list so that they can be at the operations center at the local level to disperse mental health staff.

We've done a lot of networking with other state agencies, Red Cross, et cetera. We've found that being on different task forces such as this has been very beneficial. California was selected as one of the ten states to be on a national task force. Each state has members from the state Office of Emergency Services, from the regional FEMA office, and then, of course, the state Department of Mental Health, and this has been very beneficial as far as seeing what should be in place to have an effective response.

Some of the things that we've been looking at, and we know that there needs to be a lot of work done, are in the training area, in the mutual aid area, and with the use of volunteers.

We were very fortunate in the Bay Area to have a very active county disaster coordinators group. They have — they meet twice a year, they exchange material and ideas, and some of these things that we were working on, such as using volunteers — unfortunately, we had not completed our efforts, and I think the next go-around, hopefully, we'll be more prepared. That was a horrendous undertaking. We'd get just — we were flooded with phone calls from people who wanted to help, but we had no way to identify what their credentials were, were they trained in this type of intervention, and so forth.

So, these are some of the things that, in the future, that we will be looking at. Unfortunately, like so many people, one of the big things that — the restraints that we have is funding. We don't have any in our budget for preparedness, and so I've been working a lot with the Office of Emergency Services and some of the other agencies, and trying to see how we can benefit from them, by their ways of getting some funding, and move forward.

Thank you.

VICE CHAIR RIORDAN: Thank you very much.

Are there any questions?

Yes, Commissioner Waste.

COMMISSIONER WASTE: Just one. Do you have any idea what costs for counseling might be attributable directly the Loma Prieta earthquake?

MS. FAIN: I don't know. Do you mean the total, total cost?

COMMISSIONER WASTE: Yeah.

MS. FAIN: Well, in our grant — of course, in our immediate — we can base it on that — for the first 60 days, it was over $2 million spent. We identified, and I would imagine, although we'll be using some of that in the interim period between the two programs, that that will be used — and we have requested over $2 million on our nine-month regular program, and the reason, that even though the timeframe is a lot different, the nine-month is at a different — is a different type of intervention, more outreach, direct.

This time, a lot of time and staff effort was spent with the disaster workers. We had a lot of requests for debriefings, and I think that might be because a lot of your workers that went into the area were people who did not normally respond to a disaster, such as your CalTrans people being at the Cypress structure, and so forth.

Yes?

VICE CHAIR RIORDAN: Commissioner Eberle, and then Commissioner Snyder.

COMMISSIONER EBERLE: This is relatively recent, since the mental health aspects of emergencies and disasters has come into play, and there have been tremendous strides made in the area, and you recognized some problems that you noticed out of this.

One of the things was in the area of coordination of the mutual aid, and you recognized that you need some more training. Could you expand on that? What do you have in mind?

MS. FAIN: Well, I think, as far as for our mutual aid, we had started to investigate, before the earthquake, looking into the emergency medical services mutual aid system, and seeing if that would be something that we could piggyback on.

One of our problems — I think one of the big keys in that, in the mutual aid, is — or using volunteers is just actually an educational program, to let people know what our system is and how it works.

Following the earthquake, we had people that would call in and call directly to the Office of Emergency Services at the local level to provide services, and they would be given the go-ahead. And, however, there's no funding to support that unless they come through the local county mental health and up through the state system through OES to the federal government, so this created a problem.

Another problem that came up was using mental health agencies — or mental health staff from other county agencies, where these — all the mental health agencies, county mental health agencies, are under one umbrella, so the question is, you know, can we use those as long as we're not taking away from the services that are mandated to be provided to the communities that the staff's coming from? And there's, you know, mixed read-out on that.

I think this is probably one of the things that we will definitely be discussing at the conference in February. On the use of those, some counties really want them to go through their health services and through their local OES before they come to the impacted county. Other counties could care less. And so, I think we need to get some — something that's really defined so that everybody's following the same — I don't know if that answers your question.

COMMISSIONER EBERLE: Yes, it does. It's an area of concern of mine. We have various mutual aid systems coming down and requesting, from various agencies, and it causes a lot of confusion unless you have one standardized and recognized way of requesting mutual aid.

MS. FAIN: Right, right. I agree. I think that it — for us, it worked two ways. We had people who were offering, that were coming in the other way, without us actually going out and requesting. We did some general — through the conference — to the other counties, some general requests, but we did — that was the only request we made. But we had fire departments' debriefing teams coming in through the other mutual aid systems, and I think that's where some of the problems came up.

That's definitely something they're going to be looking at.

VICE CHAIR RIORDAN: Okay. Commissioner Snyder?

COMMISSIONER SNYDER: Yes. My comments are similar to some I've made previously.

It would appear that much of — many of the FEMA criteria are based on a different model than earthquakes. They must be based on hurricanes, tornadoes —

MS. FAIN: Um-hmm.

COMMISSIONER SNYDER: — flooding, some other model. I find the two-week application period almost impossible to meet. I don't know how you can even assess the problems you have in an earthquake within two weeks. And aftershocks continue. Your problems are different today than they were three days ago.

Is there any move afront to try to advocate with the government to change that particular part of the regulations so you have a longer period to assess what needs to be done?

MS. FAIN: Well, I think — I think that's been an ongoing discussion. And I think one of the things of — that we have only the two weeks to submit our grant, but there is room to go back in and ask for modifications and request future — more funding if the need arises. And I think the main thing is, by — to get those services out as soon as possible, and to have some funds coming in to support those. And that's the main reason.

It is an administrative nightmare, let me tell you. We submitted our nine-month grant — of course, we have seven counties — that was 9 inches thick, just to support that we have the need and what services we were going to provide, and we had to do that within the 60 days. So, you have counties out there that are busy providing the services, and then having to do all this administrative work too at the state level. We did assist them in that effort. We provided staff to go out and do some of their — helping them pull together their statistics and do some of their needs assessment with them.

COMMISSIONER SNYDER: Well, because of the makeup of various communities, the programs that need to be established are very different. You just can't say, "We're going to go out and do this program in ten communities," because they're all very different. I just find it very hard. I commend you for being able to comply with it.

MS. FAIN: Well, one thing that was very helpful for me this time is that I was allowed to bring on, through the grant process, a clinical program person to assist me in that, as far as helping the counties, so that I could pay more attention to the administrative fiscal end. And that — that helped somewhat. But it is really a huge effort.

VICE CHAIR RIORDAN: Well, we thank you. And we recognize your work as not finished yet, by any means.

MS. FAIN: No. It'll be ongoing.

VICE CHAIR RIORDAN: Thank you.

MS. FAIN: Uh-huh.

VICE CHAIR RIORDAN: We're going to move along, and we do have a committee report by Will Peak, and — pardon me.

Is there anybody here that I've missed? I don't —

EXECUTIVE DIRECTOR TOBIN: Yes, Mr. Hein, of MTC.

VICE CHAIR RIORDAN: Oh, sorry.

Mr. Hein — I really got excited here.

We're going to have the Metropolitan Transportation Commission. And I apologize.

If you would begin —

MR. HEIN: I'll be brief so you can get to your committee reports.

I get nervous meeting in rooms with chandeliers now, so —

VICE CHAIR RIORDAN: Well, if it's any consolation, you're not under one exactly.

MR. HEIN: I'm here to tell you a little bit about the Bay Area response on the transportation side, in terms of services following the quake. And clearly, it's a tribute to the resiliency of the system and the resiliency of the people that we responded so well.

The Bay Area is particularly fortunate because we have a strong transit service in place. We've had a long commitment in the Bay Area to transit. There's a strong local funding base for that transit. We have a relatively high level of service, and we have a relatively high use.

Certainly, the news focused on the major disruptions, the outage of the bridge, and the tragedies of I-80 and so forth. What the news didn't really focus on as much, perhaps, is how much of the system did survive the quake. The news, I think, was particularly good, however, in reflecting the response of the citizens and the institutions, the transit operators, CalTrans, RIDES, which is our carpooling organization, and the citizens.

So, how did we cope? Clearly, there were several key transportation links that were down, and you've heard about them today. The focus, perhaps, was on the Bay Bridge.

The Bay Bridge, on average day, carries nearly 243,000 vehicles. There are 70,000 people that cross that bridge between five and ten in the morning. Within two days of the quake, we held a joint meeting of all the transit operators, CalTrans, and other agencies concerned with transportation in the Bay region. Incidentally, that was a meeting that we had already scheduled for transit coordination purposes, and I'll come back to that point.

We decided at that time on a three-point or three-step strategy, if you would: get the services out, don't worry about the money, and we'll worry about that later; get the word out to the public; and monitor what was going to go on.

There are a lot of services that were added, and I won't go into all the detail. And they're on a map here and the handout that was made available to the press. And I can come back and answer a question if you'd like to go into that in more detail.

In terms getting the word out, the strategy was to tell the people, "Don't travel if you don't have to," "Take transit if at all possible," "Carpool," and above all, "Flex your hours." We spent a considerable effort to get that message out, and Saturday, had orchestrated a major press conference. The operators themselves got the word out through their own means. We set up a hotline through the carpooling organization, RIDES, and had a hotline number for people to call in. And employers were all given information and urged to set up flextime programs.

We monitored that information, that daily RIDES, as it went on, and I have handouts here which will show you the key ridership on all the corridors. It also has some other information which you may find interesting.

We initiated a number of surveys, MTC, CalTrans, the operators, the university, all hit the streets with surveys. And maybe in a month or so, at least some of the preliminary work from those surveys will yield some results. So, we have a lot of information to mine so we can learn what happened as a result of the different things that were put into the — into the field.

We do know some results from the numbers we have. There were some diversions to the other bridges. We think maybe 15 percent of the Bay Bridge corridor, maybe 15 percent of the trips were not taken, based on some preliminary telephone surveys. There was a considerable shift in times. Those of you who were in the Bay Area or around the Bay Area know that travel started much earlier, and ended much later.

There were some real transportation heroes. BART ridership went from 218,000 up to 353,000 a day. Their peak hour ridership actually went up over 100 percent, peak period ridership. There was a ferry system that was put into place. The new ferries and the existing ferry services added another 15,000 trips a day ridership.

We learned, I think, several lessons. Some of them, we probably should have known ahead of time.

Number one, redundancy is not a four-letter word. You heard — I heard the FAA gentleman talk about redundancy as the key to their system. Often redundancy in provision of transportation facilities is seen as waste. At least in the Bay Area, redundancy was a critical reason why we were able to survive the transportation problems that we faced with the earthquake. And redundancy should be an important transportation strategy.

Second, having in place an ongoing mechanism to coordinate services was very important. I mentioned earlier that the first meeting we had, which was the day — second day after the earthquake, was, in fact, a prescheduled coordination meeting. We have an ongoing mechanism with the operators to coordinate services. The operators, when it came time for this emergency, all the lines of communications were established, so there was no need to build new lines of communications. There was a way to, in fact, coordinate the services.

We continued that process with weekly meetings and special subgroup meetings, as were necessary.

A lot of the things we put into place actually worked fairly well: joint passes, some of the park-and-ride lots, ferry services. And some things didn't work, and again, on the other side, some of the park-and-ride lots worked and many didn't.

The problem's not over. We still have a rebuilding job on I-880, decisions being made on I-480 in San Francisco. And even with those major decisions to be made, we have ongoing construction projects which, if the SCA 1 passes in June, will take place over the next few years, which would cause major disruption to traffic in the East Bay.

So, we need to continue and sustain some of the services that we've already started or we started as a result of the earthquake.

I guess the last point is that we need to sustain, or at least regain the federal and state commitment to transit. Just to reiterate a point that we made, it was the past commitment that enabled us to survive. It wasn't the emergency funding that we were able to get, although that was important. It was the fact that there was a service in place in the first place that enabled us to provide the necessary transportation during the time when the facilities, the bridge particularly, was down.

I'd be happy to respond to any questions you'd have.

VICE CHAIR RIORDAN: Mr. Hein, I have a question, if I may ask. You may have covered it, and I may have missed it.

Since the bridge's repair, my question would be, what has transit experienced, particularly BART, in sustaining maybe a higher level of use as a result of maybe someone discovering, "Gee, it's not bad to get on BART and to get in to the city that way, as opposed to getting into my car and fighting the traffic again"?

MR. HEIN: I don't think anybody would pretend that riding BART during the earthquake was a pleasurable experience, or during the period of time the bridge was down. It was very, very crowded.

The fact is, however, that BART has been able to hold a small portion of the ridership, and the ferries are still carrying a small load. But traffic is rapidly going back to prequake.

VICE CHAIR RIORDAN: To its usual, okay.

Commissioner Iwan?

COMMISSIONER IWAN: Well, that's, I guess, exactly the same question.

VICE CHAIR RIORDAN: That's your question? All right.

EXECUTIVE DIRECTOR TOBIN: I have a question.

VICE CHAIR RIORDAN: Yes, Mr. Tobin?

EXECUTIVE DIRECTOR TOBIN: Thank you.

I have two questions. The first is, is MTC doing any studies regarding the economic impacts of disruption to the transportation systems in the Bay Area, either in terms of productivity that might have been lost, especially when the bridge link was down, or in terms of additional costs while trucking and others have to travel longer distances or face more congestion?

MR. HEIN: The answer, a simple answer, is no, and we're not. We are — we did, however, do, and became the focal point for collecting information about the costs of the services that were being provided, and the damages to the facilities sustained by the operators, and acted as, if you would, an ombudsman between the operators and FEMA and OES.

EXECUTIVE DIRECTOR TOBIN: You're the only organization that can bring all of this together in the Bay Area. I realize that, and that feeds into the second question, having to do with emergency plans. Did you have in place ahead of time in effect an earthquake emergency contingency plan? If not, do you intend to have one for future use?

MR. HEIN: MTC did not have an earthquake emergency preparedness plan. However, emergency responses is an on-again-and-off-again topic of discussion amongst the operators, in terms of the coordination of activities. Each operator has a response plan, and BART, in particular, of course, has very specific procedures to follow during an earthquake.

We intend to follow up, once we can get out of the, again, our response mode, to keep the item of emergency response on our coordination agenda, to see what we've learned here in terms of communication links and services, and what we can improve, and perhaps set that into a more formal document.

VICE CHAIR RIORDAN: Okay. Commissioner Umemoto, and then Commissioner Waste.

COMMISSIONER UMEMOTO: (Not using microphone) Yes. You were mentioning, on SCA 1, that you (inaudible) —funding made available to (inaudible) and Bay Area transit systems, and I was wondering what would be the scenario if SCA 1 got passed, in the Bay Area.

MR. HEIN: Yeah.

COMMISSIONER UMEMOTO: (Not using microphone) (Inaudible) if we had another major earthquake in the area.

MR. HEIN: Yeah. I raised the question of funding only to indicate that if the funding passes, there will be a series of construction projects in the Bay Area, which will cause a certain amount of disruption, and therefore, it's important to keep in place some of the transit services that we were able to implement during the earthquake, and particularly the ferry services.

SCA 1 is obviously important, just to the whole transportation funding program of the state. and it's not directly related to an earthquake response. If you don't have an SCA 1, you're not going to have a major — or any particular highway construction program in the state.

COMMISSIONER UMEMOTO: But it won't be funding a retrofit program with that?

MR. HEIN: No, I think you — the funding for retrofit would, in my mind, be the first priority out of funds that are existing. So, you would be using your existing funds, existing 9-cent funds, gas tax funds, for retrofit, but you wouldn't — I don't think SCA 1 is critical to retrofit. I don't think you could sell SCA 1 on retrofit; you have to sell it on the need for transportation facilities.

VICE CHAIR RIORDAN: Okay. Commissioner Waste?

COMMISSIONER WASTE: Except for BART, the Bay Area was still on the transbay transit system, which was essentially 40 years old.

MR. HEIN: AC?

COMMISSIONER WASTE: And I think this points out —

MR. HEIN: Oh, the bridge, I guess you're talking about.

COMMISSIONER WASTE: Yes, just transit. The system is on overload at this point. It didn't make any difference in terms of responding to the difficulties during the earthquake, but it points up the need — and I hope this becomes an opportunity — for development of additional transbay crossings, so that the Bay Area can continues to grow.

Obviously, this 40-year-old system will be 50 and 60 years old, and we will be basically using the same structures that were used that long ago, with four or five times the population. Is this an opportunity we should take advantage of?

MR. HEIN: Well, we think so, in a way, and it may in a different way than you're thinking.

Let me answer that in two ways.

One is, we are directed by Senate Concurrent Resolution SCA 20, SCR 20, which will direct MTC, and we, in fact, have just solicited the consultant proposals for it, for a transbay study, a transbay crossing study. And it'll look at the whole range, basically, from the Bay Bridge south, at what kind of additional crossings are needed and what they could be.

I would hope that the quake would raise in the public and political consciousness the need to sustain the kind of transit services that were put in place, particularly the ferry system, as a way to provide additional transbay capacity.

VICE CHAIR RIORDAN: Okay. Recognizing the time, is there any last, one question you'd like to ask of Mr. Hein, because I do want to come back to Will's report? Any other commissioners?

(No response)

VICE CHAIR RIORDAN: Mr. Hein, thank you very much.

MR. HEIN: Okay. And I'll leave these maps.

VICE CHAIR RIORDAN: And we appreciate your waiting for a period of time. Yes, and we'd be happy to accept any of your written proposals or — not proposals, but documents or the maps. That would be fine.

Let's go now to Commissioner Peak. And we need to be mindful of the time. I think at 4:30 we're going to lose, perhaps, some more commissioners, so let's move right along.

COMMISSIONER PEAK: Actually, I have two reports, but I can get them both in by then, I think.

The first is the Legislation Committee, which met on Tuesday. We have three bills to consider. There are 15 or 20 bills that have been introduced since the start of the session again. However, we haven't had time to analyze those. There are three that we need motions on today.

One of them is the Hayden bill, AB 1826, which was discussed this morning in conjunction with the presence of the University of California president and assistants. The committee members that I've had a chance to speak to here today see no difference — we adopted a position on Tuesday — we see no reason that we shouldn't go ahead and ask the Commission to adopt that position today also.

So, I will move at this time that on that bill, which is in your handout that was given to you this morning, that we adopt a position of support if amended.

COMMISSIONER KOCKELMAN: Second.

COMMISSIONER IWAN: Ms. Chairman?

VICE CHAIR RIORDAN: Yes, Commissioner Iwan.

COMMISSIONER IWAN: I just wonder if that's appropriate action for us to take. I don't know if we have a quorum.

VICE CHAIR RIORDAN: Well, you raise a good point. And I — we were close, and I think when we lost Pat Snyder, we actually did lose our quorum. And at this time, maybe what could be indicated is simply an informal subcommittee report to whomever it might be appropriate to. It does raise a technical — a real technical question. We are without a quorum.

COMMISSIONER PEAK: As long as we had a quorum this morning, and the meeting has not been adjourned, there are rules of order that say that you can still pass bills.

COMMISSIONER WASTE: That's correct.

VICE CHAIR RIORDAN: Well —

COMMISSIONER PEAK: So, I don't think we need a quorum at this point in time.

VICE CHAIR RIORDAN: But — now, wait —

EXECUTIVE DIRECTOR TOBIN: No, I think when we lose the quorum, we can't — we can't take an action.

VICE CHAIR RIORDAN: If you're acting as a public body — and I can't speak to the Commission, but I can tell you what happens with a board of supervisors — you cannot transact business. You can accept information and listen to comments, et cetera, but you cannot transact business. So, I suspect this Commission falls into that same — and Mr. Umemoto is kind of nodding like this, like he agrees with me.

COMMISSIONER WASTE: I think the way it works is that you can still call — if somebody questions it, then you have to yield to the question, but if nobody questions it —

VICE CHAIR RIORDAN: Well, it's obviously raised, and it's on the record, and so I don't know how long that particular bill will be moving around. I suspect it's in — it's in what? its first committee, at this point?

EXECUTIVE DIRECTOR TOBIN: This is the Hayden bill?

VICE CHAIR RIORDAN: Uh-huh.

EXECUTIVE DIRECTOR TOBIN: Well, it's — yes, it's still — it's in its first committee, but it's amended into an existing bill that's still in the assembly.

Let me summarize — well, I think an informal vote would be very helpful to us, you know, to begin with. And I think that we as a staff have a concern that, in part, the bill has some technical errors in it that refer to words like "safe," when that's not possible. It has the Seismic Safety Commission designating unsafe buildings that is just improper. And we've talked with the author's staff, asking that those be changed, and I'm sure that they can be changed.

Secondly, the bill calls on the University of California and the State University system to do a master plan for retrofitting their buildings that have earthquake problems. And I think that in — certainly in concept, that's something that's very consistent with what the Commission would like to see, and an idea that we would support.

The third item, it calls on the University and the State University to post their buildings with notices. And I would think that that's an issue where the Commission still has yet to resolve a position on that, and we would, you know, so advise the committee, that this is something that we too are working on. It's a very important public policy issue that needs to be thought through. And at the present time, we don't have a position on that aspect of the bill.

And, you know, I guess those are the amendments that we would be working toward, with the idea that the overall intention of the bill is something that we can support.

COMMISSIONER SCOTT: Is there any problem with the programs that are going on?

EXECUTIVE DIRECTOR TOBIN: No, except that we will be called on to testify on this bill, and the author does want us to be present. And, you know, I mean, if I see nods of everybody, you know, I'm fairly secure in that kind of a position for the Commission to take. It's —

VICE CHAIR RIORDAN: I think —

COMMISSIONER PEAK: Pardon me. I was going to say, all three of these bills, something — some direction is going to have to be given to staff before the February meeting, or they're going to have to act on their own. So, you can go either way. You can give them the direction now, or you can just let them act on their own. But there is going to have to be taken on all three of the bills I have here.

VICE CHAIR RIORDAN: I think that Mr. Tobin's assessment was fairly accurate of what we've discussed and talked about. And if there's any objection to what he just said, maybe that's what he ought to communicate, that we don't have a position yet on posting, we agree in general concept, yeah, you ought to do a plan — I've forgotten what the last was.

EXECUTIVE DIRECTOR TOBIN: Well, and the last were some technical changes so that, you know —

VICE CHAIR RIORDAN: Yeah, right, the technical —

EXECUTIVE DIRECTOR TOBIN: — the Degenkolb report's not misused, or the Commission's not put in the position that —

VICE CHAIR RIORDAN: Okay. Let's leave it at that. And staff, I think, has a pretty clear idea of where we are.

EXECUTIVE DIRECTOR TOBIN: Okay.

VICE CHAIR RIORDAN: Next one, Will?

COMMISSIONER PEAK: Well, I don't know whether — I guess I can't — well, I'll still make it a motion and see what happens.

It's in — again, in your packet. It's AB 1279, by Hauser. And the list that was given you — incidentally, this list that you received this morning in the handout is a consolidated list, now, of the Commission's position on all bills, down to the last three bills on Page 8, and those are the three that I'm taking up now, and with the hopeful positions that we were going to come up with.

This strengthens the URM law. There are problems with the Hauser bill, AB 1279. It does put some more teeth into the 547 law, and I think we've all agreed pretty much that teeth are needed in that bill.

And so, what we were proposing was a motion to support this bill if amended. And that was the position of the Legislative Committee.

EXECUTIVE DIRECTOR TOBIN: The bill has — not voluntary, but permissive language. It says the local governments "may" do certain things, and what they may do, in effect, is to cause an owner to strengthen an unreinforced masonry building. And if the owner won't do it, the jurisdiction can go in and actually do it for them and put a lien against the property.

Because it is something that is permissive and up to a jurisdiction to consider whether or not they want to do that as part of their program, I would personally see that as a local option that should be exercised. It would be a much more difficult issue for us to decide whether or not we were trying to force local governments to take that kind of an action.

But this is a position that's been supported by the League of California Cities and others, so it — my sense is that it is a good option to give to local governments, and it's up to them to determine whether or not they can exercise it and when it's appropriate to exercise that kind of rather heavy-handed action.

COMMISSIONER SCOTT: You mean it strengthens the hand of local governments to call for that. Is that right?

EXECUTIVE DIRECTOR TOBIN: That's correct.

VICE CHAIR RIORDAN: Mr. Tobin, let me ask you a question. Has CSAC taken a position on this bill?

EXECUTIVE DIRECTOR TOBIN: I don't know of a CSAC position.

VICE CHAIR RIORDAN: Okay. I'm going to abstain, because having just seen this for the first time, this — you know, you've got to read every line.

EXECUTIVE DIRECTOR TOBIN: It's a very difficult bill to read well.

VICE CHAIR RIORDAN: And understand exactly what they're saying.

I don't know what the amendments were that the committee had thought of, but I'd like a real opportunity to at least let my colleagues try to understand it before I would, representing them, want to take a position.

COMMISSIONER SCOTT: Supporting the concept?

VICE CHAIR RIORDAN: I don't know. I honestly don't know what this says yet. I need to look at it, because it's asking — I think it goes beyond what I think I think I thought it might do, so — what would the group like to give Mr. Tobin as sort of a thought of where he ought to be?

I hope this bill doesn't move too fast. Maybe that's a position we ought to take.

EXECUTIVE DIRECTOR TOBIN: Well, I don't think it'll move too fast. As we're not the sponsor of the bill to begin with, and so we're not placed in the position of being the proponents. I think that it's — you know, I would like to see us, you know, certainly support it, the concept, and realize that there are some details that do need to be worked out before the Commission could support it wholeheartedly.

You know, I would like very much to hear what Commissioner Riordan and CSAC have to say as well, before, you know, we go too far.

COMMISSIONER EBERLE: You say there's interest in the bill.

VICE CHAIR RIORDAN: Yeah. Oh, there's interest, sure, absolutely.

COMMISSIONER EBERLE: It could be either way.

VICE CHAIR RIORDAN: But, you know, I really want to be cautious. This is kind of a major step.

EXECUTIVE DIRECTOR TOBIN: Would it be acceptable to the Commission that, unless we hear differently from those of you that have a chance to read it, that we would be supporting this legislation, subject to amendments, but recognizing that Commissioner Riordan or one of you others may call with a caution. If so, we would — we would soften that position, you know, and be neutral for a while.

COMMISSIONER EBERLE: Subject to reaction from the whole Commission too.

EXECUTIVE DIRECTOR TOBIN: Right. No, I understand, but it's not only these bills, but we're in a particularly dynamic position with the legislature, in that there are so many bills that are now alive, so many amendments that are being made, that there are — we're not subject to the normal sort of timelines, where bills are introduced and they're around for two or three weeks, and then maybe they're heard, and they've got a couple more weeks to be heard.

We have bills that are being scheduled right now with amendments that we haven't really — we've hardly seen yet, and so that we're going to be in the position of having to take a lot of positions over the next four weeks, you know, without Commission action, because, you know, frankly, we're expected to, and the legislature expects us to be in there advising.

And, you know, so we've got to be very, very careful and keep as close touch with all of you and sort of the policy positions that you have.

COMMISSIONER UMEMOTO: (Not using microphone) Well, one thing for sure, the Commission is a hundred percent (inaudible) *California At Risk* (inaudible) legislation.

EXECUTIVE DIRECTOR TOBIN: Right.

COMMISSIONER UMEMOTO: (Not using microphone) (Inaudible) staff recommendations (inaudible). I'm very confident that staff could (inaudible) to the questions that are asked during (inaudible) public policy experts (inaudible). And I think with recent events in the legislature, I recognize (inaudible) has relied on us to testify to (inaudible).

So, (inaudible) comfortable with at least the concepts.

VICE CHAIR RIORDAN: That's probably, you know, a very good position.

Let me just ask that a couple — perhaps we request of staff to take this before the CSAC staff and the League of California Cities, because, you know, one sentence can be wrong, and it kind of destroys the ability of the bill to be reasonable. And that's what I worry about, because I think there are some very technical issues in here. And maybe they will have comments, so maybe we can join them in a position of support, but do all the following amendments, or maybe it's perfect — who knows?

COMMISSIONER SCOTT: Could we get an advisory opinion from our San Bernardino counsel today?

VICE CHAIR RIORDAN: Certainly. But I really would like CSAC and the League to kind of take a good look at it.

EXECUTIVE DIRECTOR TOBIN: I was going to say,, since I don't see Brian, I'll tell Brian.

VICE CHAIR RIORDAN: Will, the third one?

COMMISSIONER PEAK: The third item is going to be even tougher to handle, because we've been asked to sponsor a bill. And this would extend the Alquist-Priolo mapping program to include such things as liquefaction, ground-shaking, and slope failure. Now, some of those may be questionable. I think liquefaction certainly has been thought of, ever since the Loma Prieta quake, in relation to the Alquist-Priolo bill, but this is a bill by the speaker of the Assembly, Willie Brown, and his office has asked that we sponsor the bill.

And the consensus of the committee was that we should go ahead on that basis. And I'll have to leave it at that point, I guess, right now, and throw it out for comments.

VICE CHAIR RIORDAN: Comments?

EXECUTIVE DIRECTOR TOBIN: Well, this is a measure we've been after for a long time, a matter that — it's recognized that damage in earthquakes will be attributed, in a very tiny percent, to active faulting, and whereas the Alquist-Priolo Special Study Zone is a very important program. It's primarily important because of the awareness and the research that's gone into locating active faults. But when it comes to reducing damage, it's not terribly effective.

What's going to be effective in reducing damage is dealing with the causes of the actual damage. And that's, first and foremost, ground-shaking, and secondly, soil failure, as that affects the structures upon them.

We, at this time, do not have a capability in the State of California to map areas, even though we have the capability to differentiate these areas, on a close enough scale where local government policies can be crafted to deal with the issues. Without question, it's important that a bill like this not imply parcel-by-parcel accuracy, but it will be areas of high likelihood of liquefaction failure, or areas of high likelihood of slope instability, or areas where ground motion is going to be amplified.

It's, in effect — well, I don't know if we'd call it "microzonation" or macro-" in terms of the actual accuracy of what it is that we're doing. But from a public policy standpoint of using geological information and what we've learned from the geotechnical, this is the next step.

COMMISSIONER KOCKELMAN: What's the scale? 1 to 24?

VICE CHAIR RIORDAN: Commissioner Scott?

EXECUTIVE DIRECTOR TOBIN: The scale hasn't been worked out.

COMMISSIONER SCOTT: This is — excuse me — it seems to me like a good idea. I just want to ask, do you think that CDMG could handle this without additional resources? In other words, you've just passed the bill, but no additional resources.

EXECUTIVE DIRECTOR TOBIN: No. CDMG would absolutely have to have additional resources, and their estimates have been on the order of an initial program, I believe, of about $3.5 million first year —

COMMISSIONER SCOTT: Okay.

EXECUTIVE DIRECTOR TOBIN: — second year, $2.5 million or so, something —

COMMISSIONER SCOTT: So that would be part of the package.

EXECUTIVE DIRECTOR TOBIN: Yes.

COMMISSIONER SCOTT: Okay.

EXECUTIVE DIRECTOR TOBIN: Yes.

VICE CHAIR RIORDAN: And we're asked to —

COMMISSIONER PEAK: Sponsor.

VICE CHAIR RIORDAN: Sponsor, okay. Does anybody —

COMMISSIONER IWAN: Well, I'd just like to support the comments of the Executive Director. It would seem to me that this — certainly this concept is consistent with so many different things that the Commission has said in the past that I would think that, at this point, it would not be at all inconsistent to adopt a position of sponsorship, without a formal vote of this group, I think, based strictly on the past concerns of the Commission. I think, also, going with that is, if we sponsor it, it means that we then would have the ability to make changes along the way that — if we find specific things as we move along that would be of concern to the Commission.

So, I guess I would argue that a position of support — or, not support, but of sponsorship — would be very consistent with our past activities. we don't need to take a vote right now in order to go ahead on that.

VICE CHAIR RIORDAN: Fine. I think the Director can move forward as if we might be sponsoring this.

COMMISSIONER EBERLE: I would like to have a look at the scale, though, too, if it's 1 to 24,000 or less.

COMMISSIONER IWAN: And I think that we could do as the bill moves on.

COMMISSIONER EBERLE: Yeah.

COMMISSIONER IWAN: If we're sponsoring it.

COMMISSIONER EBERLE: Well, that's true.

COMMISSIONER PEAK: Strong motion.

VICE CHAIR RIORDAN: What?

COMMISSIONER PEAK: I'd like to have the strong motion report.

VICE CHAIR RIORDAN: Okay. Very short, because Commissioner Eberle wants just a very — a minute.

COMMISSIONER PEAK: The Strong Motion Committee met on the 19th of December, and the main thing that came out of there was a bombshell that was dropped on the — at least the commission members — in fact, on everyone present, just about, by the Department of Conservation and CDMG, which indicated — and I won't go into the details of why — that it was going to be practically impossible to finance the $250,000 grants program in the future, that that money was going to have to be diverted elsewhere, into overhead for the division, actually.

And we had no idea this was coming. There was considerable discussion on it. The discussion needs to be continued, and I believe this was discussed — Bill tells me this was discussed last night at some length at the Executive Committee meeting, and it was decided there — and I would certainly back the idea — that a high-level meeting between the Department of Conservation, Division of Mines and Geology, and this Commission, represented mainly by the SMEAC members, I suppose, be held in the very near future, to try to resolve this financing problem.

Otherwise, the whole idea of a directed research program, which had appeared to be off the ground and proceeding quite well under the Strong Motion Instrumentation program, is in real jeopardy.

VICE CHAIR RIORDAN: Okay. Thank you.

And, Commissioner Eberle?

COMMISSIONER EBERLE: Last, but not least.

Just — I don't think we can take any action at this point, but we're recommending that Commissioner Snyder be appointed to the Emergency Planning and Response Committee. She indicated an interest to be on that committee.

VICE CHAIR RIORDAN: Okay. Make sure to put that on the agenda so that we can vote on that next meeting.

EXECUTIVE DIRECTOR TOBIN: And I believe you have a meeting scheduled before the next Commission meeting —

COMMISSIONER EBERLE: That's right.

EXECUTIVE DIRECTOR TOBIN: — and I would say that she should be included and invited to that meeting.

VICE CHAIR RIORDAN: Oh, absolutely.

EXECUTIVE DIRECTOR TOBIN: And without the formalities of an actual vote.

VICE CHAIR RIORDAN: All right. Okay.

I hope there's not much more business, because some of us have to leave.

Is there anything more, Mr. Tobin?

EXECUTIVE DIRECTOR TOBIN: Well, I would like to see all of you next month at the Milliken Board Room at California Institute of Technology, Cal Tech, in Pasadena. The meeting is scheduled to begin at nine o'clock, again, in the Milliken Board Room.

VICE CHAIR RIORDAN: Okay.

EXECUTIVE DIRECTOR TOBIN: The meeting will last until about 2:30 or three o'clock. It would be good if we cold keep a quorum, and you're the last ones I should say that to.

VICE CHAIR RIORDAN: Commissioner Umemoto?

COMMISSIONER UMEMOTO: Yes. I think we need to be put on record as applauding the Seismic Safety Commission staff for their persistence in helping the Commission out in all of our activities. And I just wanted to mention that and put it on the record.

EXECUTIVE DIRECTOR TOBIN: I appreciate that. And Keith has been able to see a little more firsthand what's been happening to — and I'm sort of the lucky one — I think the others are really absolutely besieged.

But we're at a point where all the incoming lines to our telephone are, at time, busy, and people are at their wit's end. I mean — and I too appreciate very much the very hard work.

VICE CHAIR RIORDAN: That goes without saying. I think our staff has done an excellent job, and we appreciate that. And we know that they have much to do.

(Applause)

VICE CHAIR RIORDAN: There's much, much more to do, and we probably won't see the end of it until perhaps next year at this time.

Again, thank you for staying. I appreciate that.

And we'll adjourn to the next meeting in February.

(Thereupon, at 4:40 p.m., the meeting was adjourned.)

## —o0o—CERTIFICATION AND DECLARATION OF TRANSCRIBER

I, Cynthia M. Judy, a duly designated transcriber, do hereby declare and certify that I have transcribed Tapes 1 through 10, which were recorded at the Seismic Safety Commission's hearing on the Loma Prieta Earthquake, which was held in Sacramento, California, on January 11, 1990, and that the foregoing pages constitute a true, accurate, and complete transcription of the aforementioned tapes, to the best of my ability.

Dated: January 24, 1990

CYNTHIA M. JUDY
Transcriber

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